RAILROAD GAZETTE

FRIDAY, APRIL 28, 1899.

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Contributions.

Cast Iron or Steel Tired Wheels.

The Standard Steel Works,
Philadelphia, Pa., April 19, 1899.

To the Editor of the Railroad Gazette:

Noting your editorial comment in the issue of April 7th (p. 247) regarding the Committee of the Master Mechanics' Association to consider the relative merits of cast iron and steel tired wheels, we cannot help expressing the feeling that it would have been fairer had you not rushed forward quite so rapidly to express an opinion unfavorable to the use of steel tired wheels. In advance of knowing the views of the railroad men who are qualified to discuss the subject, you put the matter before your readers in such a way as to predispose them against the steel tired wheel.

We do not know how thoroughly posted you may be in regard to the subject, but with very little knowledge of the subject you would know that the question of the use of steel tired wheels very seldom resolves itself down to a comparison of costs. No one on the Committee, we think, will contend that a chilled wheel is as strong as one of the best makes of steel tired wheels, and the fact that the railroad manager wants the best that can be obtained on his highest class service, is the one which in the majority of cases decides the question in favor of steel tired wheels.

THE STANDARD STEEL WORKS.

Mr. Holtz's Journal Box and Lid.

Western Maryland Railroad Co.,
Union Bridge, Md., April 22, 1899.

To the Editor of the Railroad Gazette:

In the Railroad Gazette of the 21st inst. there appears an error in my remark on M. C. B. journal box lid. I underscore the essential words which I omitted:

I use this style of the Fletcher lid on our passenger and freight equipment and on locomotive tender journal boxes. I designed this box lid from experience with the Fletcher lid. Later I learned that the Pennsylvania Railroad had made the same lid as my design, but made a lip on the lid to go around the outside of the box. *I make my design with the lip on the lid, to go on the inside of the box*, and when the lid is in the closed position, the lip or projection on the bottom and two sides of the lid go inside of the mouth of the box, and the weight of the lid is carried by the lip or projection on the lid resting on the lower inside edge of the box opening. If the weight of the lid was not carried on the box and we depended upon the bolt, it would fail, as the bolt would cut through the lid and the lid would fall off. Had the Pennsylvania Railroad made their lid with the lip on the inside, as I did, the mouth of the box carrying the weight of the lid, I believe they would be using this lid to-day. The description of the journal box and the lip A on the box is correct, also the projection B in back of box. I regret that my statement was not clear.

DAVID HOLTZ.

The Outlook for the Engineer on the Railroad.

Harvard University,
Cambridge, Mass., April 19, 1899.

To the Editor of the Railroad Gazette:

For the last seven years I have been a subscriber and careful reader of the Railroad Gazette, and I have learned to consider your opinion of the greatest value. I therefore hope you can find time to dictate the few words necessary to answer the following definite questions:

(1) Are the technical schools turning out so many men especially fitted for the engineering department as to diminish the chances for promotion in that branch of railroad work?

(2) Is a technical education in addition to college of value for one about to enter the operating department?

(3) Would a year or two of work in the engineering department be of use before beginning in the operating department?

(4) Those who do research work in the sciences have an advantage. To what does that correspond in railroad work—the testing laboratory?

H. E. H.

[(1) The engineering schools, like the law schools and the medical schools, are turning out so many men that competition is intense, but so it is in all callings. Even the business of selling liquor at retail is overcrowded. An intelligent and prosperous saloon keeper has lately told us that the business must be very carefully handled to pay. For some years the civil engineer has had an especially hard time, due partly to the falling off in railroad building, and since 1893, to the stopping of other great enterprises. In railroad work, however, the able and highly trained engineer, mechanical or civil, is certain to find a constantly improving chance, not only in strictly engineering work, but in administration. His accuracy of thought, his power to acquire knowledge, his technical information, and, above all, his high professional spirit, will put him ahead, and as time goes on the demand for men of that kind in railroad work will increase. (2.) Undoubtedly; the reason is suggested in the last sentence of the answer to (1). (3.) Yes, it would give him knowledge of essential details and of men, but "a year or two" is a very short time. (4.) We do not understand this question.—Editor Railroad Gazette.]

Compound Locomotives.

Mr. E. M. Herr, at the March meeting of the Western Railway Club, in a paper, "Compound Locomotives on the Northern Pacific," gave much detail information regarding the relative performance of two and four-cylinder compounds, and single expansion locomotives in a wide variety of service. The whole paper is a most valuable record; but in the discussion the principal points of general interest were brought out and enlarged upon by Mr. Herr, so that what follows is largely taken from the discussion.

It should first be mentioned that it was clearly shown in the paper that the cost for maintenance or running repairs (not including general repairs) of the compounds built within the last two years was about the same, or at least not appreciably greater than like costs of similar single expansion locomotives in the same service. Mr. Herr said in part:

From my experience on the Northern Pacific road my judgment is that it is advisable to use the compound locomotive in heavy freight service. I say advisable, because of the economy in fuel, and, as far as our experience went, no appreciable, or, at least, no important increase in the cost of repairs. It certainly seems advisable to use a machine that shows a saving of from 15 to 20 per cent. of fuel in regular service and no very great, or even appreciable increase in cost of maintenance.

Many railroad mechanical men, while freely admitting that the compound locomotive in heavy freight service will prove more economical in the consumption of coal than the simple engines of the same weight, boiler capacity, steam pressure and general design, give as their reason for not advocating the compound locomotive for such service, its liability to failure on account of breaking down, increased cost of maintenance and consequent longer enforced idleness. Were the failure of compound locomotives generally in the compounding features, and were such failures difficult to remedy, such objections to the use of compound locomotives would have great weight. The intercepting and separate exhaust valve, where present, the receiver in the two-cylinder type, and the larger low pressure cylinders are the peculiarly compound features. Investigation will show that the increased cost of maintenance and general unsatisfactory performance is not on account of broken intercepting valves, leaking receivers, or difficulty in packing or counterbalancing the low pressure cylinder. Failures occur on account of broken frames, broken cylinders, unequal wear on the low and high pressure sides of the engine, broken piston rods, cut high pressure valves and consequent break-downs in the valve motion, cut and badly worn cylinders and other causes, practically all of which are clearly traceable to either bad design, construction, or improper care in maintenance. It would seem an admission of inability to cope with the engineering problem of the design of the compound locomotive, or the administrative ability to care for a machine which is acknowledged to save a considerable proportion of the largest single item of expense on a railroad, to refuse to use such a machine because it breaks down. Is it not rather the duty of railroad mechanical officers to study the causes of failure in such machines, and by remedying such defects as develop in existing types, learn to design a compound locomotive so strengthened in the weak places and modified in those of impractical construction that it will not fail in service? This accomplished, a further careful observation and effort to learn how to so care for and operate this more economical machine will soon enable its cost of maintenance to be reduced, just as long years of practice and care have done in the repairs of the simple locomotive.

No one realizes more keenly than the writer, that the problems above referred to are by no means easy. The importance of knowing exactly what difficulties are experienced in regular operation and immediately applying some remedy for every defect cannot be too strongly impressed.

An advantage incident to the compound engine, I found, was the greater power it has as compared with the simple engine for the same weight on the drivers and the same cylinder power. This comes from the greater horse-power capacity which the engine has, due to the fact that it uses steam more economically at the time it is taxed to the utmost; that is, when it really comes to the point where the ability of the fireman to properly maintain steam pressure and get horse-power out of the engine is the limiting feature. I think that the compound is not as flexible as the simple engine, using the word "flexible" to mean the variations under which the compound can work without suffering a loss of economy. The economy of the compound is very much reduced when the engine is worked too lightly.

I agree entirely that it is advantageous to use compound locomotives in heavy fast passenger service, especially so in the very fast service; and the reason it is economical and advantageous is because in that service the boiler is taxed the hardest, the greatest amount of horse-power is required, the simple engine is unable to furnish it, and, consequently, the compound has the advantage. But if the same compound works on a lighter run at the same speed, where the simple engine is not taxed so severely and is not worked below the most economical point of cut-off, the compound will not show so advantageously. The compound does not drift as easily as the simple engine, generally; it is true that considerable improvement has been made in that respect recently, but with the double cylinders, as in the case of the 4-cylinder compound, and the larger piston, in the case of the 2-cylinder compound, my experience indicates that the compound shows a noticeable difference in the ease with which it drifts. Now, in a very light passenger service a locomotive is drifting much of the time, or at least working steam so lightly that it is practically drifting, and when this condition is approached the compound immediately begins to decrease in economy.

The relative value of compound and simple engines in passenger service is something that I have investigated a good deal, in replacing passenger engines on the Northern Pacific road. It became necessary not long ago, on account of the heavier trains that had to be hauled, to decide on what divisions the compounds should be used, and on what divisions simple engines should be used, or whether compounds should be used entirely. The experience with the compounds was all on one division, which, it is true, is quite diverse as to gradients, and it was from that experience we had to determine what the disposition of the compound and simple engines should be on the entire extent of line of the Northern Pacific road, covering a distance of over 2,000 miles. The outcome of the research was that it was decided to put compound locomotives on just one-half of the divisions. The compound engines were put where it was thought the heaviest work was to be done. On two divisions of the road adjoining each other, one just east of the Rocky Mountains, the other just west, it was quite a question as to which one of those divisions should have the simple and which the compound, or whether both should have the compounds—both were pretty heavy divisions. It was finally decided that on one should be the simple engines and on the other compounds, and I arranged for a test, as a matter of information, to change these engines after they had been running three months, and run the compounds on the division to which the simples had been assigned, and the simples on the division to which the compounds had been assigned. That was done after I left the road. I have learned since that the test showed that the original disposition of the engines was the correct one, although the economy of the compound over the simple on the division on which the compound was originally placed was very slight indeed; it was almost a "toss-up" whether the compound or the simple should oe used in that particular service. There are other divisions on which the work is lighter, and I am very well satisfied that if we had had the compound instead of the simple on those divisions we would have suffered a loss in fuel; and on that account I think we should be a little cautious as to how the compound is used in passenger service, because, generally, the engines are not worked in passenger service beyond the most economical point of cut-off for the simple engine, and worked pretty light on the down grades. The ideal place, in my judgment, for compound engines is on level divisions in freight service. That may seem strange, because nearly everybody who talks about compounds, favors them for heavy mountain service, or hill service, or something of that sort, but it must always be remembered that the hill has two sides, that the engine that goes up must come down, and while the compound shows splendid economy going up the hill, it will do the reverse coming down. On a level division, if the operation is correct, there ought to be an economy as a result of working steam both ways. The question raised as to cylinder ratio is one on which I cannot speak with any degree of certainty. I believe that it is not possible from any road tests that can be made, to say much about the proper cylinder ratio. The place, in my judgment, to test cylinder ratio is on a testing plant such as they have at Purdue, or at the Chicago & Northwestern shops.

As indicating how long a compound locomotive can be kept running under adverse conditions, reference may be made to a ten-wheel engine on the Northern Pacific with 112,000 lbs. on the drivers, with 22x26-in. high-pressure and 34x26-in. low-pressure cylinders carrying 200 pounds steam pressure. It hauls a train of between 500 and 600 tons over a profile of road, the gradi-

ents of which vary from a level to about 80 ft. grade, a large proportion of it being grade. The train often consists of fifteen cars, four or five of them sleepers and dining cars, and is hauled a distance of 273 miles, on a schedule averaging between 30 and 32 miles an hour, making a great many stops; there is no changing of engines in the 273-mile run. The engines are double and triple crewed and have been in that service two years in June. They make regularly about 8,600 miles a month. In stationary service it has been demonstrated, I believe, that there is no advantage in using pressure higher than 160 lbs. to produce economy in simple engines. There are different conditions in locomotive performance, however, and I am not at all sure that there is not some gain wtih simple locomotives in getting pretty high steam pressure, even as high as 180 lbs. to the square inch. I made a test of that sort on a mountain engine, and while the results may not serve for general application, nevertheless, in certain conditions of service, I think it is very possible that there may be economy in these higher pressures, even for the simple engines. The test was made on the Northern Pacific road on the Cascade Mountains, by taking one of the consolidation mountain helper engines, weighing 135,000 lbs. on the drivers, and strengthening the boiler and increasing the steam pressure to 180 lbs. per square inch, with 150 lbs. per square inch on the other similar engines. These engines had cylinders originally 22-in. diameter and 28-in. stroke; we bushed the cylinder of one engine carrying 180 lbs. steam pressure, so that the tractive power of the high-pressure engine would be the same as that of the low-pressure engine. That engine was put into service beside the engine with unbushed cylinders, together with a 4-cylinder compound of the same type carrying 180 pounds of steam, and it was rather curious to see those engines, after a few months' service, take just the following relative positions—the compound engine first, then the engine with the bushed cylinders, and the engine with the unbushed cylinders below; they stood that way for a number of months, and I had reason to believe that they would stand in that order permanently if allowed to run under those conditions.

Mr. W. S. Morris, Superintendent of Motive Power, Chesapeake & Ohio:

We put the first compound engine in service on our road in 1892, on the James River division, where it has always done excellent work, and has been running in the gang of a dozen simple engines of the same class. The compound has 19 and 29 x 24-in. cylinders and the simple engines have 19 x 24 in. cylinders; all having 57-in. drivers, 160 lbs. boiler pressure, and 89,000 lbs. weight on the drivers. The division where these machines run has little or no grades, and a length of 119 miles between Gladstone and Richmond. The performance covering a period of five years, in comparison with ten simple engines in the same class and service, shows a saving of 9.8 per cent. for repairs per mile, and 20.9 per cent. in fuel on the car mile basis, by the compound over the average of the ten simple engines. Special attention is invited to this case on account of the long period it covers, and the fact that the compound engine has received no special care.

We purchased, in 1895, five compound engines for our Mountain division, between Clifton Forge and Charlottesville, Va. The design of these machines was practically on the same lines as our Class G-4 simple engines, with 21x24 in. cylinders, 50-in. drivers, 160 lbs. boiler pressure, and 110,600 lbs. on drivers. The compound we classed G-5, with 21 and 33x24-in. cylinders, 50-in. drivers, 200 lbs. boiler pressure, and 121,000 lbs. on drivers. The performance of these engines was so satisfactory that we ordered six more for the Greenbrier district, crossing the Allegheny mountains. Some improvements were made on this lot of engines, principally by the introduction of what the builder calls an "over-pass valve," that automatically opens communication between both ends of the cylinder when the engine is running down hill, steam shut off, thus reducing the objectionable effect upon the fire by the air exhaust jet from the low pressure cylinder. We also improved somewhat on the framework and cylinder fastenings of these engines with good results.

A comparison of the compounds class G-5 and the simple engines class G-4 for five months shows a saving of 29.2 per cent. for repairs per mile and 27 per cent. in fuel on the car mile basis. The extremely favorable result in the repair item of the compounds may be attributed to the fact that the G-5 engines are practically new, and the G-4 old but in good condition for their work.

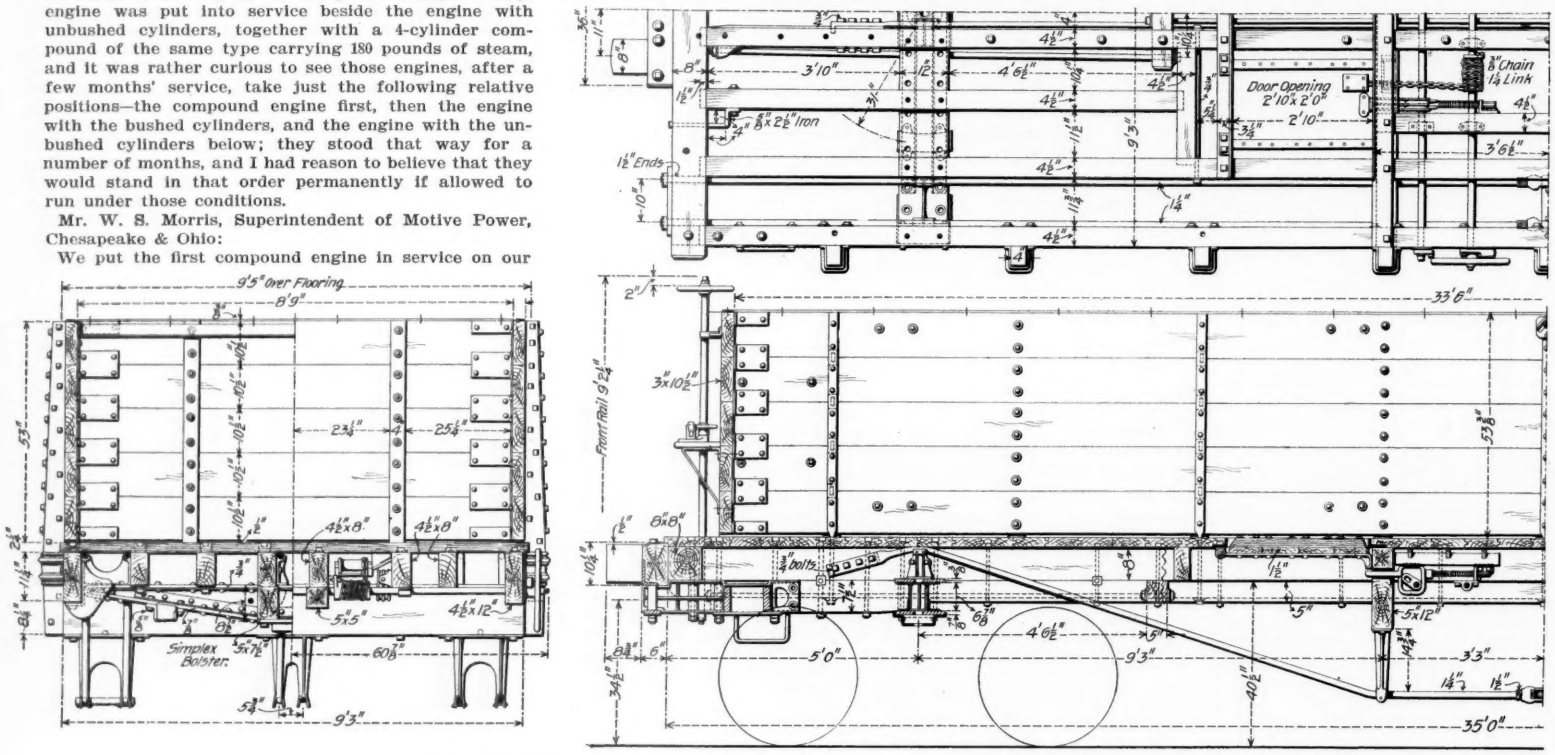
With the experience gained since 1893 with the compound of the type we have had in use, I am bound to endorse the compounding principle in freight service, and particularly so on roads where steam must be used in both directions, or where the topography of the line is undulated or level.

For mountain service, however, by introducing the over-pass valves, or a device that will overcome the objectionable effect upon the fire, the service will demonstrate greater success, and the fuel saving, though not quite as great in comparison with the more level roads, will warrant their use within reasonable clearance limits.

Mr. A. E. Manchester, Assistant Superintendent of Motive Power of the Chicago, Milwaukee & St. Paul, gave some data as to the performance of the Vauclain compounds on that road. The conclusion was reached by Mr. J. N. Barr from these statistics that in general freight service the four-cylinder compounds can be depended upon to show a saving of at least 17 per cent. in fuel and at least 14 per cent. decrease in the cost of running repairs when compared with similar single expansion locomotives in the same service.

80,000-Lbs. Capacity Gondola Car for the Lake Shore & Michigan Southern Railway.

The accompanying engravings show the principal features of some 80,000 lbs. capacity, drop bottom coal cars designed under the direction of Mr. A. M. Waitt, General Master Car Builder of the Lake Shore & Michigan Southern, 500 of which are now building for that road and 500 for the Pittsburg & Lake Erie by the Michigan-Peninsular Car Co. These cars are 35 ft. long over end sills and 9 ft. 3 in. wide over side sills, while the corresponding inside measurements are 33 ft. 6 in. and 8 ft. 9 in.; the sides are 4 ft. 5⅝ in. in height. The floor is level and has four openings for drop doors 2 ft. 10 in. long by 2 ft. wide.



80,000-Lbs. Capacity Gondola Car—Lake Shore & Michigan Southern Railway.

All the longitudinal sills are long leaf yellow pine, 4½ in. wide by 8 in. deep, excepting the side sills, which are 12 in. deep; the flooring is of the same material, 2¼ in. thick and varying in width from 6 to 10 in. White oak is used for end sills, cross-tie timbers, sub-sills, buffer blocks, draft timbers, drop doors, door sills and stakes, and Norway pine for the end and side planks. The dimensions of the various pieces are marked on the drawings. Malleable iron is used for stake pockets, buffer blocks, brake wheels, truss rod bearings and similar castings, also malleable iron draft arms made by the Gould Coupler Co. are used.

The body of the car has a camber of 1¼ in., and the longitudinal sills are framed into the end sills with double tenons. Simplex body bolsters are used which have a depth at the center of 8½ in. and are built up of top and bottom steel plates, ¾ and ⅞ in. thick respectively, between which are two webs formed of angles. At the ends of the bolster are attached malleable iron bracket castings, upon which the side sills rest, the castings extending up along the sides of the sills and acting as saddles for the truss rods as well as forming a filling piece between the sills; the side sills are secured to the bracket castings both by horizontal and vertical bolts. The center plates are pressed steel and the upper side bearings cast iron with chilled faces.

The cross-tie timbers are 5 x 12 in. oak and placed vertically, while the truss rod bearings are 14¾ in. high, making an unusually deep truss. There are six 1¼ truss rods, two between each side and outer intermediate sill, and two between the center sills. It would seem that these rods have been arranged, possibly without intention, so as to gain any advantage which may come from using the truss rods to transmit the loads to points near the center of the bolster. It was pointed out some time ago that to reduce the bending moment about the center of the body bolster in this way by any important amount the inside rods must be placed between the center sills, but even then it is uncertain whether much is gained as it is difficult to take into account the effect of the deflection of the sills on the distribution of the load. As will be seen from the drawings, each of the center truss rods, after passing over the bolster, is flattened to a bar 1 x 2½ x 15 in. with a 1½ lip on the end, which enters the sill and bears against a wrought iron plate ½ x 2½ x 11½ in. fitted into the sill under the end of the rod; four ¾-in. bolts, passing through the sill, are used to anchor each rod. The turnbuckles are wrought iron and made by the Cleveland City Forge & Iron Co.

The door openings are located between the outer intermediate and center sills. Each door is made of a double thickness of tongue and groove plank and hinged so as to be flush with the floor when closed. The doors are closed in the usual manner by winding up chains, two doors being operated from one winding shaft. When closed each door is held in place by a malleable iron latch, as shown, which is held in the closed position by a single coil spring. The latches of opposite doors are worked by separate cams mounted upon a single unlocking shaft and the opening and the closing is done from the side of the car.

Simplex truck bolsters, as shown, are used for all the cars, consisting of 12-in. steel channels for the compression members, ¾x10-in. steel plates for tension members and malleable iron end castings; the frames are of the usual arch bar type. The spring plank is a 13-in. steel channel and the guide bars are malleable iron castings. The trucks have steel axles, McCord journal boxes, adjustable journal bearing keys of the National Railway Specialty Co., Harrison dust guards, National Hollow brake beams and "Diamond S" brake shoes. Other special equipment consists of Westinghouse air brakes, Gould couplers and roller side bearings made by the Chicago Railway Equipment Co.

The Development of the Four-Cylinder Compound.

At the March meeting of the Western Railway Club, in discussing compound locomotives, Mr. R. H. Soule, of the Baldwin Locomotive Works, made such a concise statement of the changes which have been made in the four-cylinder compound as the result of a few years' service, that we give his remarks practically in full.

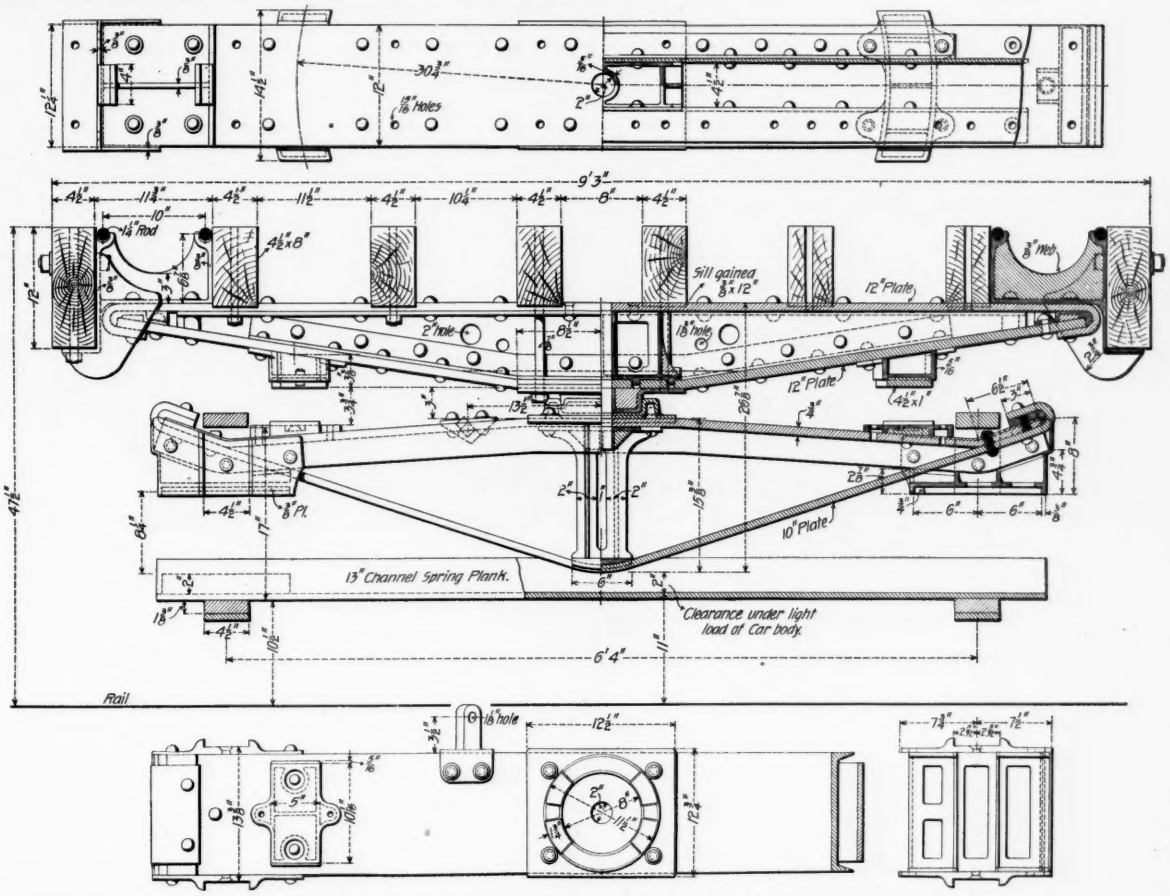
"A very good point has been brought out that some allowance ought to be made for the fact that the compound engine is of more recent date than the simple engine; the fact being that all our mechanical talent has been concentrated on the perfection of the simple locomotive for about 60 years, whereas a portion of that talent, only, has succeeded in bringing the compound locomotive to a moderate degree of perfection in eight years. I am not so familiar with the date when two-cylinder compounds were introduced in this country, but it was in 1891 that the Baldwin Locomotive Works got out their ten-wheel, four-cylinder compound engine No. 82, and offered it to railroads for service trials. I think that was practically the beginning of their business in making four-cylinder compound engines, which has since grown to considerable proportions.

"In addition to that handicap we have the other

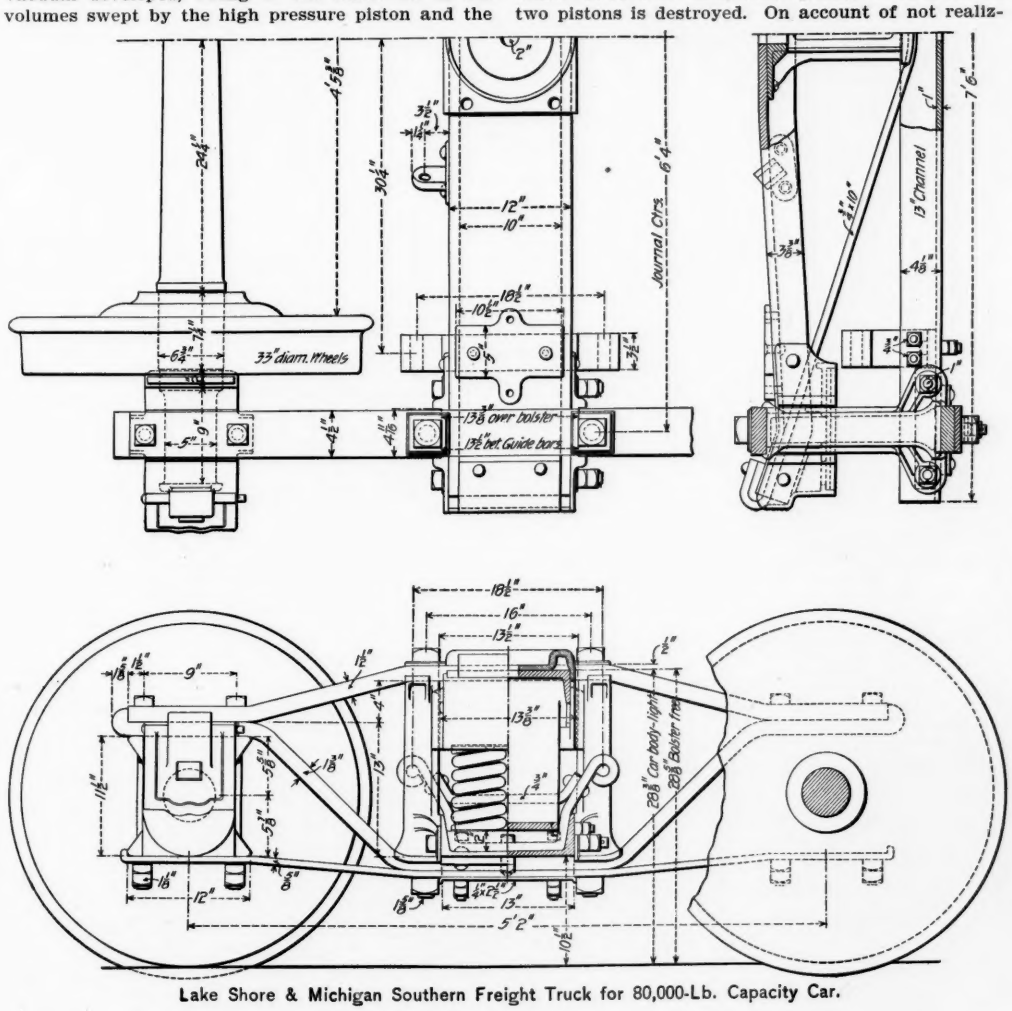
serious handicap that the compound locomotive, from the nature of the thing, never can be so simple as the simple engine, under any circumstances.

"In thinking of the development of the four-cylinder compound, different things have occurred to me, which show the increased advantages which have been obtained in the construction of four-cylinder compound engines since 1891. For instance, the cylinders are made larger now than they were before: that is, in designing compound cylinders to replace simple cylinders, we would to-day make the compound cylinders larger in diameter than we formerly did. In addition to that, the ratio between the volume of the high pressure cylinder and the volume of the low pressure cylinder is different now from what it was at first. Then, again, valves and valve chambers were not made large enough at the beginning; they are made from an inch to an inch and a half larger in diameter now than they were at the beginning; the area of the port openings is correspondingly greater; the steam passages are differently arranged; the arrangement of lap and lead, and, in fact, the whole construction of the valve is different from what it was then. There was one great trouble in the early compounds which ought to have been anticipated, but which was not. When a four-cylinder compound is drifting down grade, we must not only relieve the vacuum which forms back of the high pressure piston, but there is still a more serious vacuum developed, owing to the difference in the volumes swept by the high pressure piston and the low pressure piston at a time when the two cylinders are in communication. Modern four-cylinder compounds drift freely, proper relief valves being provided.

"Then the contention was made at the outset that the four-cylinder compound might be so designed that under ordinary working conditions the loads on the high pressure and low pressure pistons would practically be the same, so that there would be no rotative effect on the cross-head; but I do not think that the makers and advocates of the four-cylinder compound are inclined to press that claim any longer. In fact, it is pretty thoroughly understood now that there is only one position of the reverse lever for any given set of conditions, such as steam pressure, speed, etc., where that can be true; if that one position is departed from by throwing the reverse lever either forward or back, that equality of loads on the two pistons is destroyed. On account of not realizing that condition of things the guides of the original four-cylinder compound engines were made altogether wrong; they were made on the same basis as had been found to be good practice in the simple engine. In the four-cylinder compounds to-day the guides are more than twice as wide as they were on the original engines. Two and a quarter inches was the original standard, now it is five inches. Besides this, the guide yoke is made heavier and stronger than originally, and is more firmly attached to the boiler.



Simplex Body and Truck Bolsters for 80,000-Lb. Car—Lake Shore & Michigan Southern Railway.

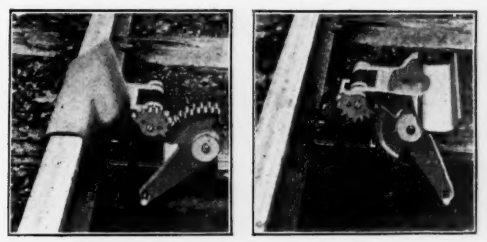


Lake Shore & Michigan Southern Freight Truck for 80,000-Lb. Capacity Car.

"Some of the most successful achievements in recent four-cylinder compound engine practice have been in the line of fast and heavy passenger service. The success in that line seems to be due to several different things. One element, of course, is the general improvement of the engine and the fact that the distribution of steam is better understood. Another, is the fact that the engine is perfectly balanced as between its two sides; that is not true of the two-cylinder compound. Besides this, I am told that one of the difficulties experienced in running a two-cylinder compound at high speed is that, on account of the complication of the intercepting valve, the back pressure runs up very rapidly in the high pressure cylinder; but in the four-cylinder compound, where there is no intercepting valve, there is no trouble of that sort; therefore I think that any review of four-cylinder compound engine practice or to-day is not complete without referring to the fact that we have reached very good results in high-speed passenger service."

A New Derailing Device.

The accompanying engravings show a derailing device, recently patented by Mr. David Anderson, Master Mechanic of the Northern Ohio Railway, at Delphos, O., and Mr. David Bevan, an employee of the same road. It belongs to that class of derailers in which the flange of the foremost wheel is carried up and over the rail instead of being merely diverted, as in the usual switch. Therefore the rail is not cut. It will be seen that the derailing is caused by a malleable iron block which fits about the head of the rail and has a flange of such shape that the wheel is carried over the rail. The derailing block is connected by a pin joint to a stand spiked to a tie. By means of a pair of gears and a crank the derail can be attached so as to work with the interlocking or other signals in the usual manner. When not in use the derailing block is turned back out of the way of trains.

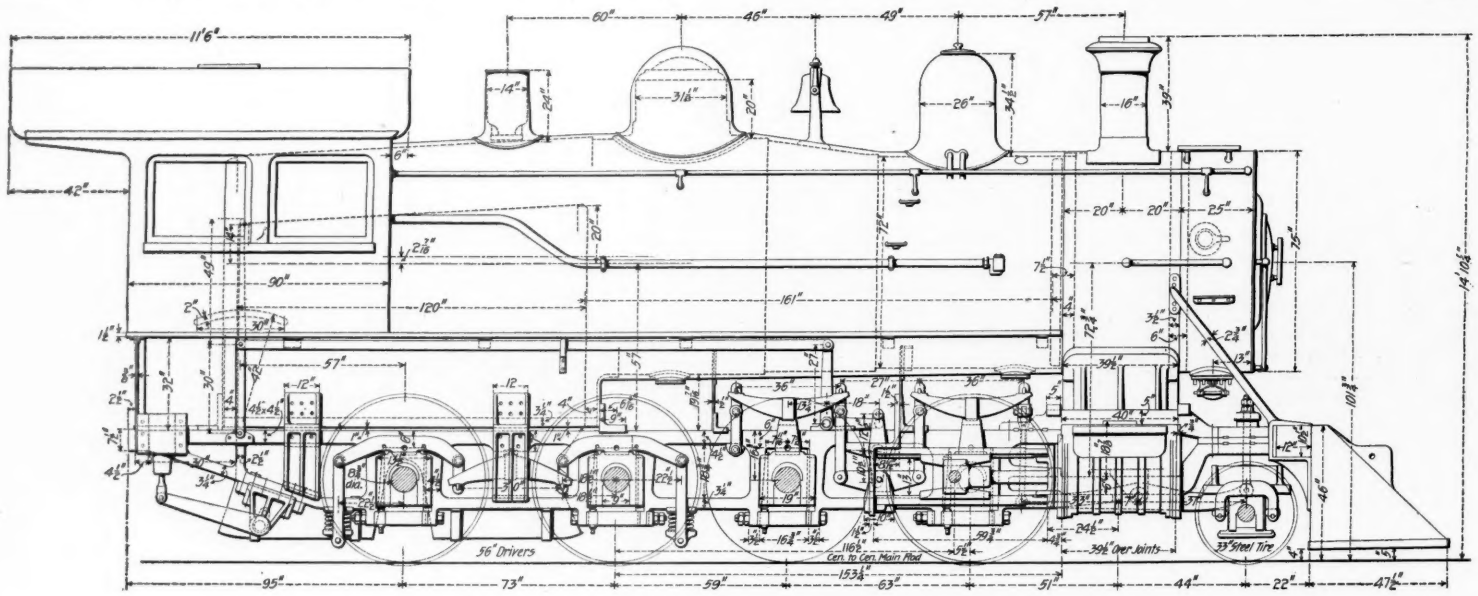


Anderson & Bevan's Derailer.

As the block has a bearing on the top of the rail with lips along either side, no load of any consequence is brought on the stand while a wheel is passing over the block. The flange is so formed that a train can trail over the block without causing a derailment, the same as with a split switch. The total weight of the derail is 30 lbs. The Cleveland, Cincinnati, Chicago & St. Louis now has several of these devices in use.

Heavy Consolidation Locomotive for the Cleveland, Cincinnati, Chicago & St. Louis Railway.

The Cleveland, Cincinnati, Chicago & St. Louis has recently received from the Richmond Locomotive & Machine Works a heavy, sample consolidation locomotive built from designs made under the direction of Mr. William Garstang, Superintendent of Motive Power. This is the largest locomotive so far built for that road, the next in size being the consolidation engine illustrated in our issue of April 15, 1898, which had a total weight of 150,500 lbs., with 134,650 lbs. on the driving wheels, and a theoretical tractive effort of about 32,900 lbs. The one shown in the accompanying engravings has corresponding weights of 185,000 and 165,000 lbs., respectively, and a theoretical tractive effort of about 44,100 lbs., or an increase of about one-third. The cylinders are 22 × 30 in., and the driving wheels 56 in. in diameter, all but the second pair of drivers having flanges.



Richmond Consolidation Locomotive for the Cleveland, Cincinnati, Chicago & St. Louis Railway.

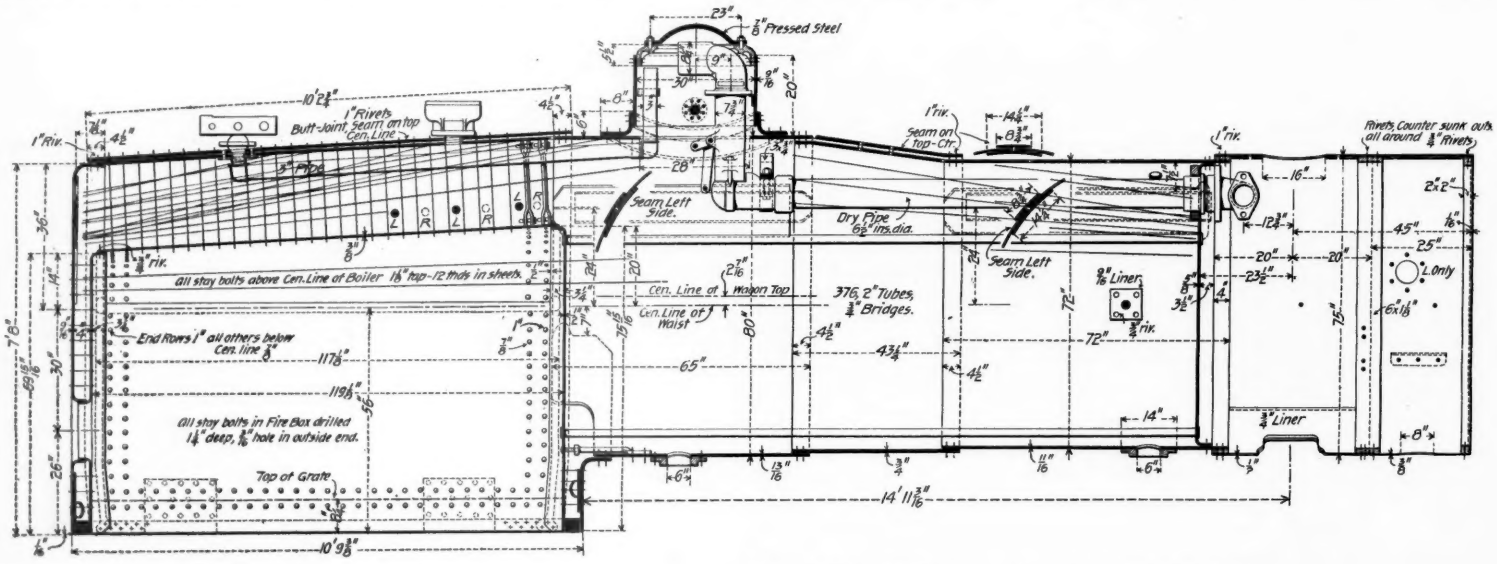
The boiler is of the radial stay, extended wagon top type, and is shown by the detail drawings. It is designed to carry a steam pressure of 200 lbs., and has a total heating surface of 2,800.5 sq. ft., of which 2,623 sq. ft. is in the tubes and 177.5 sq. ft. in the fire box. The boiler is lagged with magnesia sectional blocks. The frames are strengthened by a substantial steel casting placed back of the bumper beam and between the frames.

The size of the tender is in keeping with the engine, weighing loaded 110,000 lbs., and having a capacity for 6,000 gallons of water and 10 tons of coal. The trucks are of the Fox type made of pressed steel.

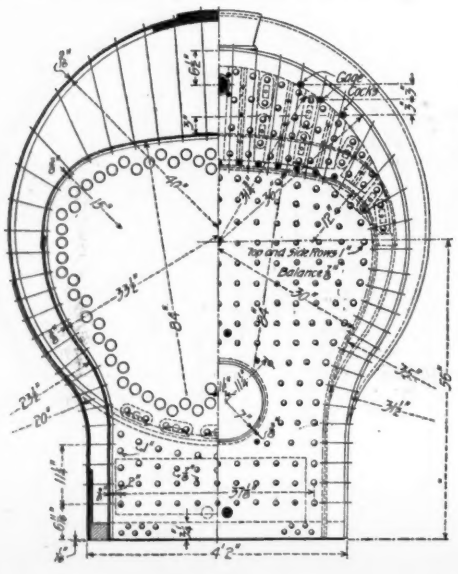
Cast steel has been largely used, and the following parts are of that material: Wheel centers, cylinder heads, cross-heads, steam chests and covers, foot plate, front brace plate, driving boxes, spring saddles, dome ring, rocker shaft, expansion pads and couplers.

The following are the principal dimensions and the names of the makers that furnished special equipment:

Gage	4 ft. 8½ ins.
Fuel	Bituminous coal
Weight on drivers	165,000 lbs.
" " truck wheels	20,000 lbs.
" total	185,000 lbs.
" tender loaded	110,000 lbs.
Wheel base, total, of engine	24 ft. 2 in.
" " driving	16 ft. 3 in.
" " total (engine and tender)	54 ft. 1¾ ins.
Length over all, engine	38 ft. 1 in.
" " " total, engine and tender	63 ft. 7 ins.
Height, centre of boiler above rails	8 ft. 5¾ ins.
" of stack, " "	14 ft. 10¼ ins.
Heating surface, firebox	177.5 sq. ft.
" " tubes	2,623 sq. ft.
" " total	2,800.5 sq. ft.
Grate area	34 sq. ft.
Drivers, diameter	56 in.
" material of centers	Cast steel
Truck wheels, diameter	33 ins.
Journals, driving axle, size	8¾ x 11½ ins.
" truck " "	5¾ x 10 ins.
Main crank pin, size	7½ ins.
Cylinders, diameter	22 ins.
Piston, stroke	30 ins.
" rod, diameter	3¾ ins.
Kind of piston rod packing	Metallic
Main rod, length center to center	9 ft. 8½ ins.
Steam ports, length	20 ins.
" " width	1¼ ins.
Exhaust ports, length	20 ins.
" " width	2½ ins.
Bridge, width	1¼ ins.


23"
7/8" Pressed Steel
10'2¼"
1" Rivets, Butt-Joint, Seam on top Cen. Line
1" Riv.
Seam on Top-Chr.
Seam Left Side.
Dry Pipe 6½" Ins. dia.
Rivets Counter sunk outs all around ¾" Rivets
All stay bolts above Cen. Line of Boiler 1⅛" top-12 thds in sheets.
Cen. Line of Wagon Top
Cen. Line of Waist
376 2" Tubes, ¾" Bridges.
End Rows 1" all others below Cen. line
All stay bolts in Fire Box drilled 1¼" deep, ⅜" hole in outside end.
Top of Grate
14' 11 3/16"
10'9⅜"

Boiler of Consolidation Locomotive—C., C., C. & St. L. Ry.



Valves, kind of	Richardson balanced
" greatest travel	5¾ ins.
" outside lap	1 in.
" inside lap or clearance	0 in.
" lead in full gear	⅛ in
Boiler, type of	Extended wagon top
" working steam pressure	200 lbs.
" material in barrel	Steel
" thickness of material in barrel	1/16, ¾ and 13/16 in.
" diameter of barrel	72 ins.
Seams, kind of horizontal; inside and outside welt strip	Butt joint
" " circumferential	Double riveted lap
Thickness of tube sheets	½ and 5/8 in.
" crown sheet	5/8 in.
Crown sheet stayed with	Radial stays
Dome, diameter	30 ins.
Firebox, length	9 ft 11⅛ ins.
" width	3 ft. 5⅛ ins.
" depth front	76 ins.
" " back	70 ins.
" material	Carbon steel
" thickness of sheets	5/8 in.
" brick arch?	No
" water space, width— Front 4 ins.; sides, 3½ ins.; back, 4 ins.	
Grate, kind of	Shoking Company's standard
Tubes, number	376
" material	Charcoal iron
" outside diameter	2 ins.
Tubes, length over sheets	13 ft. 5 ins.
Smokebox, diameter	75 ins.
" length	68½ ins.
Exhaust nozzle	Single
" "	Permanent
" " diameter	5¼ ins.
" " distance of tip below center of boiler	2 ins.
Netting, wire or plate	Both
" size of mesh or perforation	3 x 3 ins.
Stack	Straight
" diameter	16 ins.
" height above smokebox	3 ft. 3 ins.

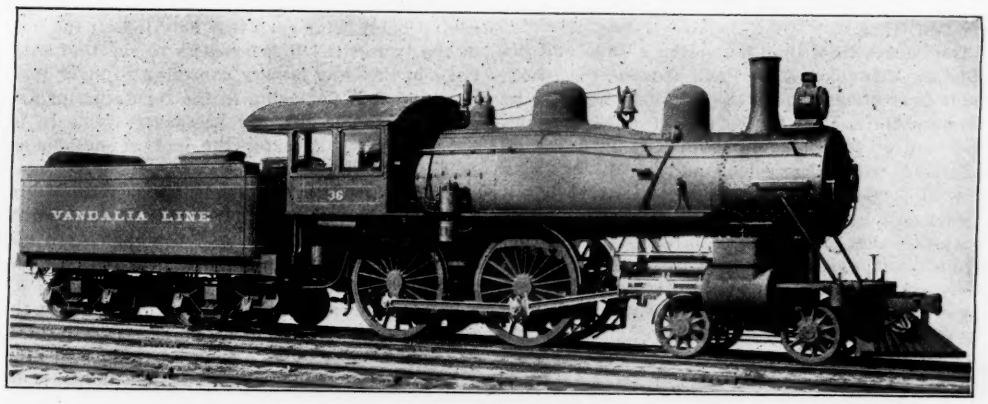
Tender.

Type	With swivel trucks
Tank capacity for water	6,000 gals.
Coal capacity	10 tons
Kind of material in tank	Steel
Thickness of tank sheets	¼ and 5/16
Type of under-frame	Steel
Type of truck	Fox pressed steel
Truck with swinging motion.	
Diameter of truck wheels	33 ins.
Diameter and length of axle journals	5 x 9 ins.
Distance between centers of journals	6 ft. 4 ins.
Diameter of wheel fit on axle	6⅜ ins.
Diameter of center of axle	5⅜ ins.
Length of tender frame over bumpers	25 ft. 6 ins.
Length of tank	22 ft. 6 ins.
Width of tank	9 ft. 6 ins.
Height of tank, not including collar	5 ft. 0 in.
Height of tank over collar	5 ft. 6 ins.
Type of back drawhead	M. C. B. Coupler

Without water scoop.

Names of Makers of Special Equipment.

Tires	Latrobe Steel Co.
Sight-feed lubricators	Nathan Mfg. Co.
Front and back couplers	McConway & Torley Co.
Safety valve	Kunkle
Muffler	Coale Muffler & S. V. Co.
Sanding devices	H. L. Leach
Injector	Nathan Mfg. Co.
Driver brake equipment	Westinghouse-American
Tender brake equipment	Westinghouse
Tender brake beam	Chicago Ry. Equip. Co.
Driver brake shoe	"Diamond S."—Sargent Co.
Air pump 9½ ins.	Westinghouse
Steam gages	Crosby Steam Gage & Valve Co.
Engine truck springs	A. French Spring Co.
Driving springs	" "
Tender springs	" "
Piston rod packing	C. C. Jerome
Valve " "	"



A Schenectady Eight-Wheeler for the Vandalia Line.

A Schenectady 8-Wheeler for the Vandalia Line.

The Schenectady Locomotive Works has recently sent to the Vandalia Line four 8-wheel passenger engines with 20 in. x 26 in. cylinders and 78 in. driving wheels. These were designed for heavy and fast service, and are now running between Indianapolis and St. Louis. They were built by the Schenectady Works under the direction of Mr. W. C. Arp, Superintendent of Motive Power of the Vandalia.

These engines have steel axles throughout and solid bronze driving boxes. They are designed to carry 190 lbs. working pressure, and have a total heating surface of 2,241 sq. ft., and a grate area of 30.07 sq. ft. Details of the weights and dimensions will be found in the descriptive specification below.

It is said that these engines have gone into service with remarkably little trouble in breaking in, and that their performance has been very satisfactory in speed and in the weight of trains hauled.

It will be observed from the tender specification that the water capacity is 6,000 gallons, which, so far as we know, is the largest tank yet used in passenger service.

Gage	4 ft. 8½ ins.
Fuel	Bituminous coal
Weight in working order	132,300 lbs.
" on drivers	85,800 lbs.
Wheel base, driving	8 ft. 6 ins.
" " rigid	8 ft. 6 ins.
" " total	24 ft. 5 ins.

Cylinders.

Diam. of cylinders	20 ins.
Stroke of piston	26 ins.
Horizontal thickness of piston	5¼ ins.
Diam. of piston rod	3¼ ins.
Kind " " packing	2½ ins. C. I. rings
" " " rod packing	United States
Size of steam ports	18 x 1⅝ ins.
" " exhaust ports	13 x 3 ins.
" " bridges	1⅞ ins.

Valves.

Kind of slide valves	Allen-American
Greatest travel of slide valves	6 ins.
Outside lap " " "	1⅛ ins.
Inside " " "	0 ins. line
Lead of valves in full gear,	Line and line full forward motion, ¼ in. lead at 6 in. cut off.
Kind of valve stem packing	United States

Wheels, Etc.

Diam. of driving wheels outside	78 ins.
Mat'l " " " centers	Cast steel
Tire held by	Shrinkage
Driving box material	Prosphor Bronze
Diam. and length of driving journals,	8¾ ins. dia. x 11½ ins.
" " " " main crank pin journals,	6 ins. in dia. x 6 ins.
" " " " side rod. crank pin journals,	4½ ins. dia. x 4 ins.
Engine truck, kind	4 wheel rigid center
" " journals	6 ins. dia x 10 ins.
Diam of engine truck wheels	36 ins.
Kind " " "	McKee Fuller steel tired spoke wheels.

Boiler.

Style	Extended wagon top
Outside diam. of first ring	62¼ ins.
Working pressure	190 lbs.
Mat'l of barrel and outside of firebox	Coatesville steel
Thickness of plates in barrel and outside of fire box,	5/16, 11/32 & 3/8 in.
Horizontal Seams, butt joint sextuple riveted with welt strip inside and outside.	
Circumferential seams	Double riveted
Fire box, length	108¼ ins.
" " width	40 ins.
" " depth	F., 75¼ ins.; B., 61¾ ins.
" " material	Carbon steel
" " plates, thickness,	sides, 5/16 in.; back, 5/16 in.; crown 3/8 in.; tube sheet, ½ in.
Fire box, water space,	Front, 4 ins.; sides, 4 ins.; back, 4 ins.
" " crown staying	Radial, 1 in. diam.
" " stay bolts	⅞ in. and 1⅛ in. diam.
Tubes, material	Charcoal iron, 120 ins. thick
" number of	320
" diameter	2 ins.
" length over tube sheets	12 ft. 5 ins.
Heating surface, tubes	2,066 sq. ft.
" " fire box	175 sq. ft.
Heating surface, total	2,241 sq. ft.
Grate "	30.07 sq. ft.
" style	Rocking Vandalia st'd.
Ash pan, "	Plain dampers front and back
Exhaust pipes	Single
" nozzles	4¾ ins., 4⅞ ins., 5 ins. dia.
Smoke stack inside diameter,	1½ ins. at top, 16 ins. near bottom
" " top above rail	15 ft. 4⅞ ins.
Boiler supplied by	Two injectors, Sellers Improved, No. 9½ R. H.; Monitor, No. 9, L. H.

Tender.

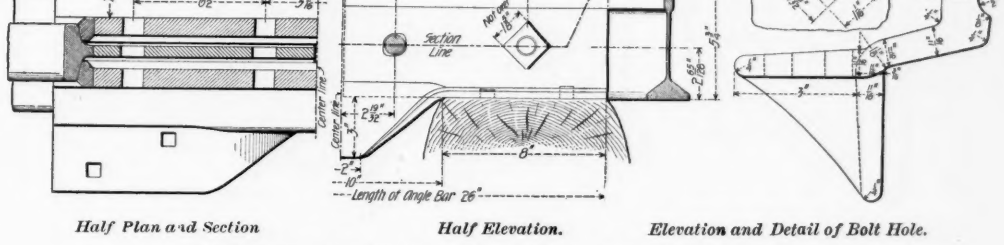
Weight, empty	46,200 lbs.
Wheels, number of	8
" diameter	36 ins.
Journals, diam. and length	5 ins. dia. x 9 ins.
Wheel base	17 ft. 8 ins.
Tender Frame	10 in. steel channels
" trucks,	center bearing double I-beam bolster with side bearings on back truck.
Water capacity	6,000 U. S. gallons
Coal "	10 tons
Total wheel base of engine and tender	52 ft. 2½ ins.
Engine equipped with:	Two Coales safety valves. N. & Co., No. 9 triple sight feed lubricators.
Westinghouse-American combined brakes on drivers, tender and for train.	
Leach sand feeding apparatus.	
Janney Coupler at front of engine and rear of tender.	
Steam heat apparatus complete for tender and train.	
Lagging and jacket made removable over stay bolts.	

100-Lb. Rails on the Canadian Pacific.

The Canadian Pacific Railway has ordered for immediate use 50 miles of 100-lb. rails, and this amount may be considerably increased before the end of the year. These rails will be laid on a portion of the line between Montreal and Ottawa and from Montreal Junction southerly over the St. Lawrence bridge. The rails are the standard section of the American Society of Civil Engineers They will be laid with the Bonzano joint, which has already been described in the Railroad Gazette.

The engravings herewith show the joint as adapted to the Canadian Pacific rail under the direction of Mr. P. Alex. Peterson, Chief Engineer. The drawings are so complete in detail that a verbal description is superfluous. It will be observed that the angle bar is 26 in. long and that it is of heavy section. The peculiar position of the long axis of the oblong bolt hole will also be noticed.

These joints will be made in Canada by the Montreal Rolling Mill Co. The Canadian Pacific has already tried a number of them, which were made in their own shops. The bars were planed to the requisite section and the flange was bent down in a bull dozer. The experience with these trial joints is considered by Mr. Peterson to have been sufficiently satisfactory to justify him in the order now placed.



Half Plan and Section *Half Elevation.* *Elevation and Detail of Bolt Hole.*

The Bonzano Joint Applied to 100-Lb. Rails on the Canadian Pacific.

A Rogers' 10-Wheeler for the Great Northern.

The engraving, from a photograph, shows a 10-wheel passenger engine, one of 10 just shipped to the Great Northern Railway by the Rogers Locomotive Co., of Paterson. The descriptive specifications follow:

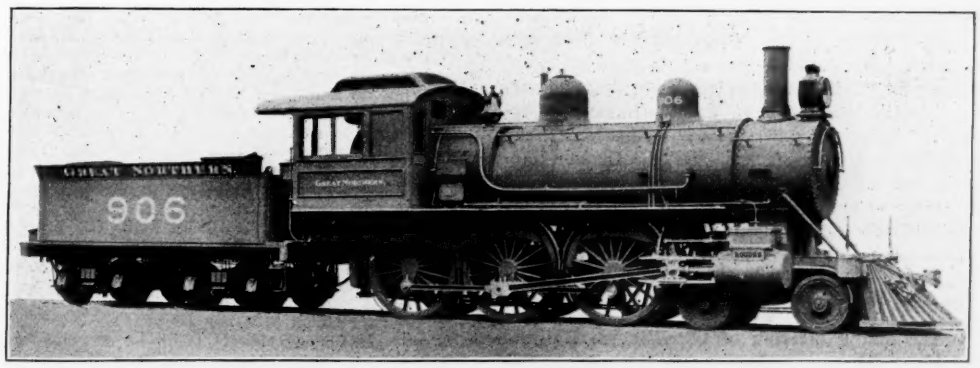
Fuel	Bituminous coal.
Cylinders,	18 in. by 26 in.
Drivers, diameter	73 in.
Driving wheels	Cast steel; driving axles, steel; journals 8 in. x 10 in.
Driving wheel base	13 ft.
Total wheel base of engine	24 ft. 3 in.
Weight on drivers	102,000
" truck	34,000
" total	136,000
Heating surface—tubes	1,813
" " firebox	162
" " total	1,975
Grate area	25 sq. ft.
Tubes—diameter	2 in.; length, 14 ft. 3 in.
" thickness	No. 11 B. w. g.; number, 243
" material	Iron
Grate—length	108 in.; width, 33¾ in.
Boiler—type	Belpaire
" diameter, outside front	63⅛ in.
" material	Steel
" working pressure	210 lbs.
" thickness of barrel	11/32 in.
" " " dome course	11/32 in.
" " " crown	7/16 in.
" " " tube	½ in.
" " " side	5/16 in.
Wheels—Engine truck, diameter	36 in.
" " " kind,	wrought iron plate center, steel tired

Tender.

Capacity	4,500
Frame	10 in. channels
Trucks	Diamond arch bar
Wheels, diameter	36 in.
" kind	Wrought iron centers, steel tired.

Fittings.

Safety valves	Plain incased
Lubricators	Triple sight feed
Headlight	18 in.
Brakes	Air-brakes, New York
Boiler covering	Magnesia
Metallic packing	Metallic
Couplers	Automatic
Bell ringer	None
Tires	3½ in. thick
Sanding device	Air
Injectors	1 lifting and 1 non-lifting
Springs	Steel
Brake beams	Metal



Rogers 10 Wheel Engine for the Great Northern

The Governor of German East Africa reports that the construction of a railroad from the coast by way of Kilossa to Lake Nyassa, and thence on to the south end of Lake Tanganyika, is now assured by the co-operation of certain German capitalists, and he advocates the emigration of German peasants to the country on the line. The line is near 10 degrees south latitude, which is rather warm for Germans.

The south end of Lake Tanganyika is about 500 miles in an air line from the coast.

"What will you take for your railroad?" said the Belgian Government to the Liege & Mastricht Company. "Thirty million francs," said the company. "We will give you 13,627,500," said the Government. "Done," said the company. The trade was not made in just these words, but that is what it amounted to, and as the shareholders got 700 francs for their 500-franc shares, they perhaps are not to be pitied. This, we believe, was the last of the considerable private railroads in Belgium.

RAILROAD GAZETTE

ESTABLISHED IN APRIL, 1856.
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EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussion of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially either for money or in consideration of advertising patronage.*

The railroad gross earnings for March, as compiled by the Chronicle, were published week before last. The gain over last year is $2,895,730, or 6.35 per cent. The comparison is made with a month which showed a gain over 1897 of 15.25 per cent., or $6,244,364. The Chicago, Milwaukee & St. Paul leads in amount of increase and the Southern comes next, each of these roads showing a gain of over $200,000. The New York Central, the Louisville & Nashville, the Rio Grande and the Great Northern have gains respectively of over $150,000. Out of 125 roads reporting 94 show increases.

The Banque de Paris et des Pays Bas and other French houses have issued the prospectus of a loan which they have agreed to make to the Chinese Government to build the railroad from Peking south to Hankow, about 780 miles. The "Brice concession" is for the continuation of this road still further south some 700 miles, more or less. The amount of the French loan is about $22,000,000, and about $13,000,000 of this is now offered for subscription. The terms of the loan carry to the lenders the reversion of the "Brice" line to Canton in case that bargain falls through—and in dealing with the Chinese Government most things can fall through if you are not on the ground in force. Thus, those who are behind the Peking-Hankow line may get the Hankow-Canton line. Then from Peking northeasterly the North China Railway is pushing on to meet the Chinese Eastern (Russian Manchurian) line. The French and Russians seem to have the best of the Chinese railroad situation so far. The lenders of the money for the Peking-Hankow line are to have complete control over the building, material, working and personnel of the line and have also the Imperial guarantee of principal and interest. Apparently the Anglo-Saxon alliance is left out. Sir Claude Macdonald has kept his government informed of what was going on and tried hard to get his government to look out for British rights and interests. Whether Mr. Conger has done as much as we do not know.

The Cost of Repairs of the Compound Locomotive.

At the March meeting of the Western Railway Club Mr. E. M. Herr and others made a very valuable addition to the available knowledge of the service record of the compound locomotive. Mr. Herr's paper itself is important, but at this moment we are more particularly interested in his contribution to the verbal discussion of the paper and especially in that part having to do with the relative cost of the running repairs of compound and single expansion locomotives, which has always been a much debated question.

Mr. Herr holds that where compound locomotives are properly designed and maintained there need be no appreciable difference in the cost of running repairs for the two kinds of engines; but general repairs are not included in his statement. It is conceded that with the present equipment of most railroad shops the cost for overhauling the compound is more than for the simple locomotive; yet it would seem probable that as the proportion of compounds to simple engines increases, and as railroad shops become equipped with tools suitable for handling the larger parts, there may eventually be no very important difference in the total cost of maintaining the two types.

The figures from the Chesapeake & Ohio and the Chicago, Milwaukee & St. Paul, showing that those roads have already found the running repairs to be considerably less for the compound, are important, and may be surprising to those who have had no experience with recent compound locomotives. As a general proposition it seems unreasonable that it should cost less to maintain the more complicated machinery, but in the case of the compound locomotive a reason can be found for this state of things. A certain large road found, some time ago, by keeping a close account of the cost of repair work, that the repairs to such parts of a simple engine as would be affected by changing it to a compound amounted to but 2¾ per cent. of the total running repairs. This ratio probably varies somewhat, but it is small in all cases; and when it is considered it is not difficult to see how the repairs to the parts that are distinctively compound might be doubled and the cost still remain a small proportion of the total. But this additional expense might easily be overbalanced by a small decrease in the cost of repairs to the boiler and firebox, which naturally follows the lighter working of the boiler of a compound locomotive.

In connection with this matter of running repairs and petty delays, another point was brought out by the discussion which is of a good deal of importance to the transportation department; that the compounds in freight service make a greater mileage and haul heavier trains than similar simple locomotives. There no longer seems to be any question as to the fuel economy of the compound in such service.

All of these points have been repeatedly brought out in the discussions of this subject; but, we believe, never before with quite so much definiteness and conclusiveness. Mr. Soule's remarks on the development of the compound locomotive will suggest immediately several reasons why the early compounds disappointed their makers and owners in the cost of repairs. The theoretical advantages of the lighter tax made by the compound on the firebox and boiler were frequently lost in the practical disadvantages of inadequate details.

Distant Signals.

A locomotive runner on a prominent road sends us the following:

In your account of the Railway Signaling Club, published on page 154 of your issue of March 3, I observe that you speak of distant signals as the most important feature of signaling. Some of us, engineers of heavy local passenger trains, which must make good time with numerous stops, are often inclined to think that the distant signal is the most important annoyance in the engineer's work. With the fast schedules which we are now required to make, a man has all he wants to do to attend to his engine, his fire and his signals; and we think that every needless burden should be taken off our shoulders. What good does the distant signal do? Some tower-men keep such signals always against us so that it is only a land mark, no better than a tree or a red house or any other object that a man can easily keep in mind. Thus it does no good except to put an additional burden upon the timid engineer who, lest some trick shall be played on him, some time or other, dares not omit to observe the signal every time he passes it. If a signal is always to be kept at danger why go to the expense of erecting a semaphore with its connections and expensive fixtures? A 50-cent post with a shingle nailed across the top would serve the purpose fully as well. The best engineers want as few signals as possible. Every competent engineer knows all his junctions, crossings, stations and every locality where he must be ready to reduce speed and all he wants is a sure indication, when he gets there, whether the road is clear. To have to watch for two signals when one will answer, is a useless requirement. One of the officers of my division agrees with me and would be in favor of less complicated signals; but others do not, and so his influence is not powerful enough to change anything. On other divisions some officers are wedded to present customs and others are indifferent.

We said that the problem of properly placing and effectively using distant signals was "in many respects" the most important single topic, etc. However, we will not quarrel with our correspondent about fine shades of meaning.

The distant signal is highly important. Without it, stop signals lose two-thirds of their value whenever a dense fog comes on, and stand as monuments of a wasteful expenditure of money. At least that is the impression conveyed to everyone who likes to see complete signaling. Whenever an engineman who, like our correspondent, is in the habit of reading his stop-signals a half mile before he reaches them, finds himself unable by reason of fog or snow to do so, he must either lose time and possibly displease the superintendent, or else keep up his speed and run the risk of colliding with something. In too many cases he chooses the latter alternative, his mental habit being such that he thinks it the lesser of the two evils. It is needless to say that taking risks in this way is very damaging to good discipline, and it is damaging to the reputation of a big road (or should be) for passenger trains to lose time on foggy days for the lack of suitable signals.

If, therefore, a superintendent wishes to maintain perfect train service he must have distant signals, for use in times of fog; and the engineman must put up with them in clear weather. If distant signals are cleared for trains at all times when it is possible to do so, they should be a relief rather than an annoyance to the runner of a passenger train, because with them he has a double assurance of a clear track. If the signalman is lazy and does not pull off the signal in good time for every train, where it is possible to do so, he should be detected and reported and disciplined. To the engineman who feels burdened with an irksome duty when he is called upon to try the water gages and look for a signal at the same moment, and who for this reason wants fewer signals, our advice is to take a course of easy private lessons in doing two things at once. He will be the happier ever after.

The Bearing Metals "Combine."

Another big combination is under way and seems likely to go through. This is a combination of concerns making, among other things, car and engine brasses. All of those mentioned as likely to go into the arrangement are active competitors for railroad business. So far as we have yet heard the following concerns will probably go in, viz.: The Hunt Manufacturing Co., of Newark, N. J.; Paul S. Reeves & Son, Philadelphia; the Damascus Bronze Co., Pittsburgh; Fulton Iron & Engine Works, Detroit; United States Bronze Co., Chicago; Hewitt Manufacturing Co., Chicago; Buffalo Brass Co., Depew, N. Y.; Milwaukee Brass & Copper Co., Milwaukee, and More, Jones & Co., St. Louis. We are informed that the Ajax Metal Co. and possibly the Brady Metal Co. are among those that are pretty sure to stay out. So far as we have heard the new concern will have about $2,100,000 preferred stock and $4,200,000 common stock, and we are told that the cash necessary to bring about the combination has been underwritten.

Looking at the proposition with only a limited knowledge of the details it seems to us that the combination is unlikely to stand long, although likely to be started. We should say that at least one-third of the product is left out, and with it are left out very important elements in the successful conduct of this business. Among the concerns that will not go in is found knowledge and skill in making this kind of product second to none, and certainly there is among them great commercial skill, a wide acquaintance with the market and a strong position among the railroads. Presumably, they can make bearings at least as cheaply as anybody else and can sell as advantageously.

There is another feature of this situation which is not found in some of the recent combinations. It does not take much capital to build and run a very efficient brass foundry. Knowledge of the metallurgy and of the trade is more important than large capital. Therefore, it is hard to see how a great combination can control the field as matters now stand and how it can keep out new competitors. A good many of the recent combinations are bound to fall to pieces because the essential elements of combination are not found in them, and this brass aggregation looks like one of the most temporary of the kind.

The New York, New Haven & Hartford has had to establish a clearing-house to deal with applicants for employment. The ten superintendents in the Eastern district found that, in consequence of their nearness to each other and the ease with which men could go from one to another, the same man would sometimes apply to several offices; and if he was a man worth having this made a good deal of unnecessary clerical work. As likely as not an applicant would give up after trying five superintendents, while at the same time the sixth, seventh and eighth would have been glad to get him. This makes a central office a good thing for both employer and applicant. The central office, located in the terminal station, Boston, has also another distinct advantage to both officers and employees. Men are frequently moved from one division to another, and in the course of reduction in train service following several transfers, older men, who may be the youngest on that particular division, are likely to suffer through oversight. In addition the record of

each man is complete, regardless of the number of divisions over which he runs. In some cases the crews run over parts of three divisions in a single day's work.

NEW PUBLICATIONS.

Steam Boiler Practice, In Its Relation to Fuels and Their Combustion, and the Economic Results Obtained with Various Methods and Devices. By Walter B. Snow, S. B., M. A. S. M. E., x+297 pages; 24 figures. 8vo. Cloth. New York: John Wiley & Sons. London: Chapman & Hall, Limited, 1899. Price, $3.

This work, according to the title page, treats of steam boiler practice in its relation to fuels and their combustion, and the economic results obtained with various methods and devices. Its pages, however, cover but a little of the area suggested by the title, being chiefly devoted to fuels and combustion and the results obtained with natural and mechanical draft. The effect of certain details, as Serve tubes, and retarders, is considered with relation to economy and in connection with the draft.

The subject matter is divided into chapters, as follows: Steam-Boiler Practice, Water and Steam, Combustion, Fuels, Efficiency of Fuels, Efficiency of Steam-Boilers, Rate of Combustion, Draft, Chimney-Draft, and Mechanical-Draft.

The first chapters are elementary and are written in a simple and interesting manner, to be comprehended by any one having a slight knowledge of physics. The succeeding chapters lead up to the last chapter on Mechanical-Draft, and gradually bring out the benefits to be expected by the use of these mechanical devices over the natural draft of a chimney. This object, which underlies the whole book, is cleverly conceived and carried out.

The work is rather a compilation of data and extracts than an original treatise on the subject, a fact which has merit, since it does not help to confuse the literature on the subject, already voluminous, but rather to bring together, under one cover in condensed form, the opinions and results of many authors. The book contains numerous tables of data, which, if understood and used correctly, will be found to be valuable for reference.

It is to be regretted that the author's preference for mechanical-draft systems should have made so prominent the selection of certain data about natural draft, concerning which there is decided difference of opinion, and caused the omission of all reference to the advantages of chimney draft. The subject of natural draft cannot be better expressed than by Peclet's theory, and any further elaboration should be rather in the direction of practical proportions and structural defects.

The discussion of the theory of fans and the power required is excellent, and contains many suggestions too often overlooked by designers and engineers. The book would have been more complete had it contained an additional chapter on the various means in practice of utilizing mechanical draft apparatus, especially showing the methods and details of connection between fan and furnace.

One of the chief merits of the book is the fact that it has a strong tendency to encourage study on the part of the steam user, and to draw attention to the fact that the consideration of first cost is, or should be, of less moment than that of operating expenses.

TRADE CATALOGUES.

The Goodwin Dumping Car.—The Goodwin Car Co. sends us a handsome catalogue of its steel, gravity, dumping car. The car is shown of various weights and dimensions and worked by compressed air or by hand. The claims made for it are fully set forth and there is considerable discussion of the theory and practice of dump cars. The pamphlet closes with tables making comparisons of ordinary double hopper cars and the Goodwin steel car, and also of wooden flat cars with the Goodwin car.

Rock Drills.—The Ingersoll-Sergeant Drill Co. issues a little pamphlet with the title "No. 25,000." One must look through the pages to discover what this means. Investigation reveals the fact that the concern has built 25,000 rock drills, most of which are said to be still in use. It is asserted that the combined capacity of these would be 375 miles of hole a year, each machine being rated at eight inches an hour, running ten hours a day. This would be a mile in less than each 1 2/3 minutes from one end of the year to the other; or it would make a hole through the earth in 21 days. We need hardly say anything more about the pamphlet. If the reader is curious for further information let him send and get it. The post office address of the company is known to all creation.

The Burlington Route.—The passenger department of the Chicago, Burlington & Quincy has issued one of its handsomest pamphlets, devoted exclusively to pictures and a very brief description of the company's new passenger station at Omaha. This station is of classical design, and the front portico is supported by 28 massive pillars. In the picture the building looks like a Greek temple, the photographer having taken care not to include in the view any such American vulgarities as stock yards or corner grog shops. The existence of such an architectural monument at Omaha must suggest to Chicago that her laurels, as the art center of America, are in imminent danger. One remarkable feature of the interior of this building is a grand spiral staircase in the center of the principal waiting room, the main floor being above the level of the train-shed platforms. This staircase, we are told, cost $9,000—a sordid fact which Ruskin would not have mentioned.

The High Speed Brake.

In our report last week of the meeting of the Association of Railroad Air-Brake Men, at Detroit, we referred briefly to an excellent paper on the high-speed brake, giving a connected account of the development of that apparatus. While some of the data have been published at one time and another, the subject is one of such importance that we give in what follows as full an extract as our space will permit, and would suggest that those interested in the subject secure a copy of the complete report.

The report opens with an account of the famous Galton-Westinghouse experiments, the nature and results of which are so well known that we shall not reprint any of that portion of the report. The reader who cares to follow the subject up, however, will do well to get the reprint of the original reports and discussions which was made a few years ago by the Westinghouse Air Brake Co. As one result of the facts brought out in these trials Mr. Westinghouse designed a valve so arranged that the friction between the brake shoe and the wheel would regulate the pressure upon the shoe; that is, when the speed fell off, and consequently the coefficient of friction rose, the pressure in the brake cylinder was automatically reduced. The apparatus was somewhat complicated and in those days the regular speed of trains was so low that it did not seem necessary to attempt in practiee such automatic regulation of the pressure.

About the year 1891 it was foreseen by the Westinghouse Air Brake Co. that the tendency toward exceptionally high speeds of certain classes of passenger trains would undoubtedly result in a demand for more efficient action of the brake shoes at high speeds. Various forms of apparatus were devised and subjected to experiment, with a view to obtaining the increased efficiency during the earlier portion of the application of the brakes, without the use of complicated mechanism, such as was experimentally tried in England in 1878. A careful survey of the conditions which must be met, indicated that a satisfactory apparatus for use upon high-speed trains should possess the following charactics:

First—In emergency applications it must cause a considerably greater pressure of the brake shoes upon the wheels during the early portion of the application, which pressure must be gradually reduced, as the speed declines, until a pressure is reached which may safely be maintained until the train is brought to a stop, without causing injurious wheel sliding.

Second—It must permit all service applications to be made, without causing a pressure of the brake shoes upon the wheels greater than immunity from injurious wheel sliding permits.

Third—Because of the high speed of trains to which it is especially applicable, whereby such trains traverse a very considerable distance during the ordinary time of recharging the auxiliary reservoirs after brake application, the brake apparatus must be so organized and supplied with such air pressure that two or three service applications of the brakes might be made in comparatively rapid succession without the necessity of wholly re-charging the auxiliary reservoirs during the intervals.

Fourth—The apparatus must be simple, free from complication and applicable to the standard quick action brake apparatus in use without material modification of it.

Early in the year 1894 a series of trials was made of an apparatus designed with these objects in view upon a train of six passenger cars. In the organization of that apparatus an effort was made to increase the pressure of the brake shoes upon the wheels at high speeds to a point which was near the limit of safety against wheel sliding. This necessitated extraordinarily heavy brake gear, which introduced unusually great frictional resistance to the transmission of power between the brake cylinder and the brake shoes. As a result the reduction of air pressure in the brake cylinder, as the speed reduced, was not promptly accompanied by the reduction of the pressure of the brake shoes upon the wheels, and wheel sliding was the result. Subsequently the apparatus was reorganized and the air pressure in the brake cylinder was increased during the early part of the emergency stops to only such a degree as could be safely withstood by the standard brake gear in use upon passenger rolling stock.

A second series of tests was made near Ship Road, Pa., on Oct. 1 and 2, 1894. The point at which the test was made was on a descending grade of 29 ft. per mile. The weather was fair and the rails dry on both the days mentioned. The train consisted of a locomotive and six Pennsylvania passenger cars, the total weight of train being 564,000 lbs. The train was fitted throughout with the high-speed brake apparatus, and the leverage of the brake gear was calculated for 90 per cent. braking power upon the cars with 70-lb. train line pressure. The locomotive was fitted with driver and truck brakes, operated in connection with an automatic reducing valve of the high-speed system. The tender was supplied with quick-action triple valve and high-speed reducing valve. The brakes were automatically applied by a trip arrangement, connected with the train pipe, coming in contact with an obstruction affixed to one of the ties. No alteration or change was made in the apparatus throughout the tests. When a train-pipe pressure of about 70 lbs. was employed, the apparatus throughout the train acted, of course, as it would with the ordinary quick-action brake, the automatic reducing valves of the high-speed system not being caused to operate. When the high train-pipe pressures were used, the high-speed apparatus was fully operative and the stops shortened accordingly.

Below is given a tabulated list of the tests. On the first day it was desired to make comparative tests at a speed of about 45 miles an hour. On the second day a speed of about 60 miles was employed. A very correct speed-recording apparatus was employed in all the tests, and the length of the stops was carefully measured.

Results of Ship Road Tests.

Train Line Pressure.	Speed, Miles per Hour.	Distance, Feet.	Corresponding Distance at Speed of.	Averages.
			45 M. per Hour.	45 M. per Hour.
71	47¾	776	694	688
69	45½	697	683	
100	46¾	584	567	567
104	46¼	610	580	
100	47	601	555	
			60 M. per Hour.	60 M. per Hour.
68	60¾	1,697	1,658	1,622
71	61½	1,634	1,558	
71	58¾	1,584	1,649	
100	61¼	1,372	1,319	1,296
104	61¼	1,361	1,299	
105	61½	1,330	1,289	
108	58¾	1,125	1,189	1,172
109	61¼	1,202	1,155	

These are the only comparative tests that have been made and conclusively proved that the appartus fulfilled all the requirements which it was designed to meet and, at a speed of 60 miles per hour, stopped the train in about 450 ft. shorter distance than is required with the use of the ordinary quick-action brake.

Shortly after these tests, the high-speed brake apparatus was applied to the Empire State Express trains of the New York Central road, where it has ever since proved highly efficient and satisfactory, and it has entirely eliminated trouble from wheel sliding. It has since been applied to fast express trains upon other roads, giving equally successful service.*

It may be interesting to cite some experiments with the high-speed brake that were made at the Westinghouse Air Brake Co.'s shops, as follows: With an auxiliary reservoir charged to 110 lbs. pressure a reduction of 19 lbs. pressure in the train pipe was necessary to obtain 60 lbs. pressure in the brake cylinder; this left 91 lbs. in the train line. During the few moments in which the piston was returning to the "full release" position the reservoir and train line was recharged to 95 lbs. A reduction of 15 lbs. in train pipe pressure was thereafter necessary to obtain 60 lbs. pressure in the brake cylinder; this left 80 lbs. pressure in the train pipe, which, with the auxiliary reservoir, as in the preceding case, during the release, was augmented some 4 lbs. A third application was then made by reducing train line pressure 15 lbs. to obtain 60 lbs. pressure in the brake cylinder. This left 69 lbs. pressure in the train pipe and auxiliary reservoir, which, as in the preceding cases, was increased to 73 lbs. during the restoration of the cylinder piston to its normal position of release, and there was still enough pressure left in the auxiliary reservoir to have made a full emergency application.

It is desirable and recommended that in equipping high-speed trains, in order that the best results may be attained, that the engine trucks also be braked. The only change necessary on the tender is the substitution of the quick-action triple valve for the plain automatic and the use of the automatic pressure reducing valve.

The point that is sometimes raised against the use of the high-speed brake is the possibility of the engineman making an emergency application with the high pressure while running at a low rate of speed, as at a water tank or where any accurate stop is required, increasing the liability of sliding wheels. While this, to a certain extent, is true, the engineman, realizing the enormous braking power at his command, would be less inclined to use it than with the ordinary brake. This might be compared to a case of the engineman reversing his engine with the driver brakes applied if they were not doing their proper share of holding; whereas with the driver and train brakes holding as they should, there is little tendency toward reversing the engine. At the pres-

* We omit the description and illustrations of the modern high speed brake. The reader is referred to our issue of June 25, 1897, p. 452.

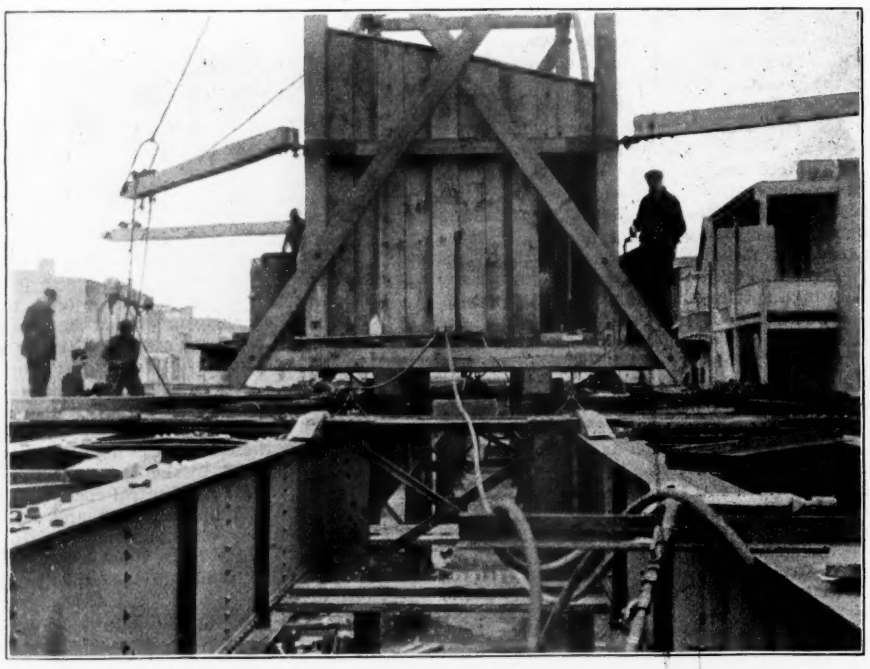
ent time there are only about a half dozen of the fastest trains in the country equipped with the high-speed brake, and reports show them to be giving very satisfactory service, with few or no slid-flat wheels.

It may be interesting to note here that the distance in which a train can be stopped from a speed of 40 miles per hour is nearly twice as great as that from which it can be stopped from a speed of 30 miles per hour. At 50 miles per hour the stopping distance is more than three times as great as that required at 30 miles per hour, and nearly twice as great as that required at 40 miles per hour. At 60 miles per hour, the distance required for stopping is about five times as great as that required for 30 miles per hour, and more than two and a half times as great as that required at 40 miles per hour.

Pneumatic Field Riveting.

It is doubtless well known to many of our readers that work in building the Northwestern Elevated Railroad structure in the city of Chicago has recently been taken up again after having been at a standstill for many months. It is supposed that financial arrangements have been at last made by which this structure can be carried on to such connections as will permit profitable operation. For the moment the interesting point about it is the building of the structure.

The field riveting is done by pneumatic tools, compressed air being supplied by a portable plant carried on the structure. The engraving from a photograph shows the method of rigging this plant. A 12-h. p., combined, gasoline air compressor of the Fairbanks-Morse type is used for the work. This is mounted on a platform which is carried on flanged wheels, which wheels run on the top flanges of the longitudinal girders. The air compressor and receiver tanks are roughly housed in and to the frame erected on this structure booms are swung which carry the yoke riveters.



Pneumatic Field Riveting on the Northwestern Elevated, Chicago.

Yoke riveters are used chiefly for driving the rivets of the cross framing where it is attached to the stiffeners. Hand pneumatic hammers are used principally on the laterals and cross struts and also on the diagonals in the towers. Every fourth span is a tower span.

Rivet heating forges are carried along with the compressor plant and the whole plant is hauled forward as fast as the work passes beyond convenient reach.

The rivets used throughout this work are ⅞-in. steel, averaging about 2⅞ in. long. Of course, with the yoke riveters a longer rivet can be driven than by hand and the ⅞-in. rivets can be driven in about 10 seconds each. In using the hand tool one man handles the pneumatic hammer and another man holds on an ordinary hand, spring dolley.

Interlocking Specifications of the Lake Shore.

Mr. E. D. Wileman, of the Lake Shore & Michigan Southern, has shown us a copy of the standard specifications for interlocking plants recently adopted by the engineer's department of that road, which are very full and complete. We note a few peculiarities observed in a somewhat hasty reading. The "general requirements" show the hand of an experienced signal engineer and superintendent. For example, the heater, provided for the cabin, must be ready for use before the plant is put in service, except where a building is finished in the summer. The cabin, which is called "tower," has every desirable accessory, though no size is specified for the clothes locker. The floor of the second story may be either double or of two-inch oak, matched and beaded on the under side. Where a machine is large, say 50 levers, special consideration must be given to the question whether the supporting frame shall not be of steel, resting on a foundation entirely independent of the tower. The ordinary rules are given for having the switch levers in the middle of a machine and the distant signal levers at the outer ends, but in large machines this rule is to be disregarded if desirable, where the plan of tracks will permit.

Foundations are to be of either concrete or cast iron, or the two combined, although, we regret to see, provision is made for carrying connections on long ties without foundations. For all transverse pipe lines the carriers must be on cast pedestals with closed housings to keep them free from dirt. Pipe carriers are to be double, anti-friction.

Large-scale drawings are given to show the method of making connections to switches and derails. Derail points not needing to be locked open have two full length head rods sliding in brackets on the unbroken stock rail. Where a derail is worked by the same lever as a switch, so that it is locked when open, stops are provided on the unbroken stock rail to regulate the throw.

Large-size drawings are given to show the manner of connecting up detector bars. All bars must be 50 ft. long, made in three pieces bolted together.

For wire connections compensators need not be furnished unless specified. Wires passing through yards, across streets, etc., are put beneath the surface in half-inch pipes, which are filled with oil. There is a drip well near the middle of each pipe and a wooden catch basin at each end.

All home signals are to be operated by pipe. Signal posts (which are called poles) are to be of such form of iron construction as is approved by the Chief Engineer, unless otherwise specified. The colored glass in back lights shall be purple of the tint farthest removed from any shade of blue. This purple is used in the lamps on the dummy posts of bracket signals.

Both home and distant signals must be bolt-locked at facing derails and junction switches. All bolt locks must be bolted to the ties which support the point they control.

Railroad Legislation in Minnesota.

The Legislature of Minnesota, recently adjourned, passed nine acts affecting railroads. House Bill No. 10 makes the railroad commissionerships elective after this year, three Commissioners to be elected in 1900, two for four years each and one for two years. Thereafter the elections will be for terms of four years.

H. B. 16 provides that after a railroad has maintained for 60 days a rate on grain, flax, coal, lumber or live stock it may not increase the rate without an order from the Railroad Commission, given after a public hearing.

H. B. 117 requires railroads to furnish stock shippers with a pass for a man both ways, "in consideration of the usual price paid for shipment."

H. B. 150 makes stealing rides a misdemeanor.

H. B. 195 empowers the Railroad Commission to order the construction of platforms at stations for shippers of grain, live stock, etc.

H. B. 221 makes applicable to street cars the law relative to getting on or off moving cars.

Senate Bill 187 requires narrow-gage railroads to be made standard, within such reasonable time as may be fixed by the Railroad Commission. It is said that this act applies only to the road of the Chicago, Milwaukee & St. Paul between Reno and Preston, 58 miles.

S. B. 413 amends the law relating to the purchase of one railroad by another. This law gives foreign corporations the rights and obligations of a Minnesota railroad which it leases or buys. The act is said to have been passed to allow the Chicago, Burlington & Quincy to buy the Chicago, Burlington & Northern.

S. B. 24 provides that in cases decided by the Railroad Commission and taken to the courts, evidence taken by the Commission may be certified to in the District Court. If the court decides to allow additional evidence it shall send the case back to the Railroad Commission. This law is to relieve litigants of the burden of making up a case before the court when the matter has already been fully presented (as regards the facts) before the Railroad Commission.

TECHNICAL.

Manufacturing and Business.

The nine locomotives recently ordered by the Chesapeake & Ohio from the Richmond Locomotive & Machine Works will be equipped with improved Michigan triple locomotive lubricators and automatic steam chest plugs. The Hocking Valley has specified improved Michigan lubricators with automatic steam chest plugs for five locomotives to be built by the Baldwin Locomotive Works, as has also the Buffalo, Rochester & Pittsburgh, for the 10 locomotives which the Brooks Locomotive Works are now building.

The Chicago Grain Door Co., Chicago, Ill., has recently received orders for grain doors for 1,000 cars for the Chesapeake & Ohio, to be built by Pullman's Palace Car Co., and also for grain doors for 500 cars for the Chicago, Milwaukee & St. Paul.

At the annual meeting of the Joseph Dixon Crucible Co., held at the company's office, at Jersey City, April 17, the old Board of Directors was re-elected. The officers are: President, E. F. C. Young; Vice-President and Treasurer, John A. Walker; Secretary, Geo. E. Long. Judge Joseph D. Bedle was re-elected as counsel.

At the annual meeting of the Canadian Pacific, the Directors authorized the expenditure during the year of $305,010 for the completion of air-brake and automatic coupler equipment and $1,000,000 for rolling stock.

An advance of 10 per cent. in the wages of their employees has been made by Dilworth, Porter & Co., of Pittsburgh.

W. J. Clarke, General Manager of the foreign department of the General Electric Co., has sailed for Europe. He will remain four months, to complete the organization of his department and to superintend the installation of General Electric apparatus on London, Bristol and Dublin tramways.

James S. Keefe, General Traffic Manager of the American Steel & Wire Co., has taken charge of the fleet of steamers recently acquired by the company for carrying ore.

Deeds have been recorded whereby the American Car & Foundry Co. absorbs the Niagara Car Wheel Co., the Buffalo Car Mfg. Co. and the Union Car Co.

The Southampton County Council, England, has decided to purchase the rails necessary for the electrical equipment of its trams from the United States.

The Chicago Pneumatic Tool Co. has secured the services of W. P. Pressinger and J. M. Towle. Mr. Pressinger, who has been connected with the Clayton Air Compressor Works for a long time, will go with the New York office, and Mr. Towle, who has been for the past ten or twelve years engaged in the making and sale of pneumatic tools, his work having been principally in the East, will open an office in Boston. This arrangement gives the Chicago Pneumatic Tool Co. offices at Chicago, New York, Boston, Buffalo, Pittsburgh, St. Louis and San Francisco.

The Lobdell Car Wheel Co., of Wilmington, is building an addition to its foundry to enable it to make large size chilled rolls and heavy castings. A 35-ton traveling crane will be installed. The main addition will be about 44 ft. wide by 132 ft. long, with monitor, with a lean-to 38 ft. wide by 88 ft. long on one side. The building will be a steel skeleton frame structure with brick curtain walls. The approximate cost of the building, without cranes or fixtures, will be $10,000.

The Marshall & Huschart Machy Co., Cleveland, O., selling agents for Gould & Eberhardt, of Newark, N. J., have sold to the Brown Hoisting & Conveying Machine Co., Cleveland, an automatic gear cutting machine of 120 x 20 in. capacity. This machine is a duplicate of one built by Gould & Eberhardt, and recently installed at the works of the Blake steam pump plant at East Cambridge, Mass.

William C. Baker, maker of the Baker Car Heaters, reports a rush of business at present, and during the past few months. Large orders testify to the in-

creasing use of his heater by leading railroads of the United States and Canada. Wagner Palace Car Company and Crossen Car Manufacturing Company, of Coburg, Ontario, and Missouri Pacific Railroad, have been recently buyers of it. Mr. Baker has also been sending his "Mighty Midget" heater to England.

The West Virginia & Pittsburg Railroad Company is going to adopt gas engines as a motive power in its new shops at Weston, W. Va., which are to be completed in June, and is now in the market for two gas engines, one of 60 H.P. for the machine shop, and one of 35 H.P. for the wood working department; also for necessary shaftling and belting.

The Goheen Mfg. Co. writes that the demand for "carbonizing coating" in 1899 has passed all former years and made necessary an addition to its plant. A new pamphlet is issued showing many large structures protected by this coating.

Mr. John C. Baird, of Boston, maker of the yellow glass used in the distant signals of the New York, New Haven & Hartford, is now making a new red glass for signals, which gives a powerful and distinctive light. This glass is red all through, not a red surface on a white glass. Mr. Baird is also making green glasses in the same way, and makes signal disks both rough and smooth.

Thompson, Son & Co., 107 Liberty street, New York, are in the market for the following second hand material: One 15x23x17 tandem compound McIntosh-Seymour engine, one 16½x26x17 tandem compound McIntosh-Seymour engine, one 60 k.w. T. H. single phase alternating, iron clad, self-oiler dynamo; one L.B. 50-light T. H. arc dynamo self-oiler ring armature, and one 18x36 R. H. Corliss engine.

Iron and Steel.

The Union Steel & Chain Co. has been incorporated in Delaware with a capital of $60,000,000. It is stated that the company has options on a number of chain plants and steel works throughout the country.

New Stations and Shops.

It has been recently reported that the Wisconsin Central would build a new station at Chippewa Falls. We are officially informed that the company does not at present contemplate any improvements at that point.

The Chesapeake & Ohio will build, at Newport News, new elevator and coal pier some time during the season. A merchandise pier will also be built.

It is stated that the Directors of the Albany Railway have authorized the building of a two-story fire-proof building at a cost of $50,000.

The Chicago & Northwestern will make large improvements in its shops at West Fortieth St., Chicago, including new buildings and machinery.

The Aschman Steel Casting Co., of Sharon, Pa., has recently spent about $30,000 in remodeling its plant.

The Canadian Pacific round house at Port William was partly burned April 17. Seven locomotives were destroyed.

Nickel Steel.

It is desired by the Master Mechanics' Association Committee to obtain a brief statement indicating the extent of the use of nickel steel for forgings and plates, particularly in locomotive construction; for how long it has been so used and in general what the results have been, although it is appreciated that no very definite conclusions can be drawn at this time. Among the questions asked are:

Have you experienced any difficulties in working nickel steel forgings or plates, and particularly in cutting clean threads on stay bolts?

Has the material, under your notice, developed marked characteristics, such as in its resistance to corrosion, its wearing surface, or under varying thermal conditions?

Please send copies of specifications used for nickel steel and of the results of tests made either in the laboratory or in service.

The committee will be glad to receive references to any literature on the subject of nickel steel.

Send answers to Tracy Lyon, Master Mechanic, Chicago Great Western Railway, St. Paul, Minn.

Compressed Air Cars in Chicago.

The North Chicago Street Railway Co. hopes to introduce compressed air motors on its lines for night use, instead of the horse cars which it has been running after its cable stops at midnight. A motor car has been received from New York, where it was successfully used on a crosstown line. The car will make a trial trip, and if satisfactory others will be bought and the Clark Street and Lincoln and Clybourn Ave. lines will be supplied with them. Later they will be used on the other horse car lines.

THE SCRAP HEAP.

Notes.

At Topeka, Kan., 200 suits have been filed in court against the Western Union Telegraph Co. for damages for disobedience of the law, recently passed by the Legislature of that State, fixing the maximum charge for a 10-word telegram at 15 cents.

The eastbound fast mail of the Burlington road on April 14 ran from Burlington, Ia., to Clyde, Ill. (8½ miles from Chicago), in 192 minutes, the distance being 197.3 miles. Stops were made at Galesburg and at Mendota, making the time in motion 183½ minutes, equal to 64.5 miles an hour.

The Railroad Commission of Louisiana, which was established a few months ago and which, soon after the members took their seats, issued rules and regulations for the government of railroads and steamboat lines, has now issued a supplementary notice containing a number of "constructions" which the Commission places on its rules, being corrections of errors and deficiencies in the original notice. One of these "constructions" suspends the long and short haul clause temporarily in the cases of New Orleans, Shreveport, Monroe, Alexandria and Lake Charles, because of interstate competition. An abstract of the original rules was given in the Railroad Gazette of March 24, p. 209. The Commission has designated the Daily Advocate, of Baton Rouge, as its official journal. In it will be published the announcements of the Commission, and this publication will be considered official notice to all whom the announcements may concern. All tariffs, rules etc., shall become effective five days after publication in the newspaper, except where the Commission orders otherwise.

The collection of letter mail by means of mail boxes placed on street cars has been a decided success in Des Moines, Ia. Over 60 per cent. of the first class mail collected there during the year 1898 was collected in the mail boxes attached to the street cars.

In the course of a strike of street railroad employees in Wheeling, W. Va., and Martin's Ferry, O., last week, there was considerable disturbance by a mob; and deputy U. S. marshals, who were trying to keep order, were attacked. Obstructions were placed on the track, at a number of places, and iron bars were fastened across the rails. The railroad being an interstate line, complaint was made to the United States Court, and on April 18 Judge John J. Jackson sentenced three of the ringleaders of the mob to 30 days' imprisonment and $50 fine.

According to the New York Sun a mob of several hundred men tore up half a mile of street railroad track at Syracuse, N. Y., last week, because the citizens of a section of the city were displeased at inefficient service by the street car company. The crowd met by prearrangement at 7 o'clock on the evening of April 21. Besides tearing up rails they smashed cars with ties, stones and brickbats. At first the work of demolition was hindered by the running of extra cars, but as the crowd augmented it grew threatening, and soon the crews were glad to haul their cars back to the barn, with windows broken and sides stove in. Everything destructible of the company's property that could be got at was smashed without discrimination. One conductor was hit with a stone and badly hurt. When the demonstration had assumed the proportions of a riot a squad of policemen was detailed to the scene, but could do nothing with the crowd, who ripped up rails and blocked the walks with piles of ties.

Drainage Canal Model.

The Chicago Drainage Board has closed a contract with Edwin Howells, of Washington, D. C., for a topographical model of the Chicago Sanitary District for exhibition at Paris in 1900. The model will be on a scale of 7 in. to the mile and will show the canal in detail from Lake Michigan to Joliet. It will cost about $3,500 and will be sent from Washington direct to Paris when completed.

Motor Car Service on the Vandalia.

The Vandalia is reported by local papers to have announced that it will shortly start a motor car service between Terre Haute and Harmony, Brazil, and Center Point and Indianapolis and Plainfield. The Vandalia has recently been experimenting with a motor car driven by a gasoline engine, and it is reported that gasoline motor cars are being considered for the new service.

Chicago Bridges.

Major Marshall, United States Engineer at Chicago, last week informed Mr. L. E. McGann, Commissioner of Public Works, that the War Department considers center pier bridges as obstructions to navigation in the Chicago River and has refused permission for a bridge of that type at 100th St., for which the City Council some time ago appropriated $50,000. The Government had previously fixed the depth of the river at 21 ft. and declared the street railroad tunnels to be obstructions, but this is the first ruling against center pier bridges for the river.

Chicago Sewer Contracts.

As a result of an inquiry into the construction of the Forty-fifth St. sewer, the North Side intercepting sewer system and other improvements, which followed complaints of defective work, Mr. Frank E. Davidson, Superintendent of Sewers, has resigned, and his resignation has been accepted. A considerable part of the work on the sewers was found to be badly done, and the investigation is still in progress. The contractors will have to remedy all defects. Mr. Davidson claimed that he had to rely upon the reports of his subordinates. A successor to Mr. Davidson will be appointed soon.

Light Railroads for India.

The Viceroy has sanctioned the construction of 550 miles of light railroads of 30-in. gage in districts in the north, south and northwest provinces of India.

Ties.

The American Lumberman estimates that the railroads of the United States will require during the year 1899 about 94 million sleepers; of which 13½ millions are assigned to the 5,000 miles of new railroad which it is estimated will be built. The demand for ties is now active everywhere. The Missouri Pacific has lately been using only about 600,000 yearly, whereas its normal requirements aggregate 1,500,000 ties a year; and, as many other roads have, no doubt, been economizing in this direction, the demand is believed to be likely to continue strong; and proprietors of sawmills are advised not to reduce prices.

Deep Waterways.

Mr. Lyman E. Cooley, of Chicago, who has been appointed by the Board of Engineers for Deep Waterways to collect information and data on the proposed ship canal between the Great Lakes and the Hudson River, is now in Washington, seeking such information at the Government Departments. Mr. Cooley was selected to study the commercial side of the project, and to make estimates of the traffic it may expect to attract and consider railroad rates and diversion of traffic, and also the nature and distribution of the agricultural products tributary to the canal. (Sept. 9, 1898, p. 641.)

The Central Hudson Steamboat Company.

This is the title of a company which has been formed for the purpose of consolidating the Homer Ramsdell Transportation Company, running a daily line of steamboats between Newburg and New York; the Poughkeepsie Transportation Company, running a daily line between Poughkeepsie and New York; the Romer & Tremper Steamboat Company, a daily line between Kingston and New York; also, the Newburg and Albany Day Line of steamboats, running between Newburg, Albany and Troy, making all landings. The directors are B. B. Odell, Jr., H. S. Ramsdell and Jacob H. Tremper and others. The capital of the new company is $1,000,000, and it will own nine steamboats.

Arrangements Between Surface and Elevated Lines, Chicago.

Plans are under consideration by the Metropolitan Elevated and the Yerkes system, which also controls the Lake Street Elevated, for dividing the surface lines and street railroad traffic of the Town of Cicero and other lines in the western suburbs of Chicago. The plan is understood to include a dividing line at Madison St., the Yerkes system retaining that street and the lines north. The Metropolitan would secure the lines south of Madison St. and build an incline at Forty-eighth Ave., connecting the elevated and surface roads, similar to the one put into operation recently at Fifty-second Ave. by the Lake Street Elevated.

Electric Railroad in China.

It was expected that a short line of electric railroad would be opened for traffic at Peking, March 10. It runs from the Machiapu terminus to the Yungting-Gate of Peking.

Annual Report of the General Electric Co.

The seventh annual report of the General Electric Co. for the year ending Jan. 31 last, shows that the total sales during the year were $15,679,431, with a calculated direct profit of $2,584,897. The increase in orders was 21 per cent. over the year before. During the year large additions were made to the company's plants at Schenectady, N. Y.; Lynn, Mass., and Harrison, N. J., the total cost of which was $897,739. The unmatured and unsettled balances due to the company at the end of the year were $4,447,311, and this sum is but little in excess of the sales of the last three months of the year, which amounted to $4,151,904.

A Lake Steamer.

The steel steamer Illinois was launched at the yards of the Chicago Shipbuilding Co., on April 22, in the presence of several thousand spectators and a large party of invited guests of the builders. She was built for the Northern Michigan Transportation Co., and will go into service early in July, between Chicago and Mackinac Island. The keel was laid last September, and the boat is 240 ft. long, 40 ft. beam, and has stateroom accommodations for 200 passengers. She can carry 250 passengers and 1,500 tons of freight. The Illinois has triple-expansion engines, and is expected to have a speed of about 17 miles an hour. She is finished in hard wood, and has hot and cold water in every stateroom. The total cost will be about $250,000.

The Cape-to-Cairo Railroad.

Cable despatches from London say that Mr. Cecil Rhodes has secured the capital to build his railroad northward 250 miles from Buluwayo. It is further stated that a British firm has taken the contract for this work.

Electric Lights in Chicago.

At the meeting of the new City Council of Chicago on April 10, Mayor Harrison began his second term. In his message Mr. Harrison said that under the appropriation of $150,000 for extensions of the electric lighting system, plans have been prepared for enlarging the present stations and installing two new stations at waterworks pumping stations, and adding over 1,200 additional lights to the city service. The city now operates 2,923 arc lamps and the message says has the largest municipal electric street lighting plant in the world. One of the new electric lighting stations will be in the southwest section of the city. The plans have been prepared and the site will soon be decided on by City Electrician Ellicott. Two new plants will be established on the west side to be in operation July 1.

Japan Railroad Notes.

It is announced that the charter of the Formosan Railway Company, which has postponed the work of building its road through lack of funds, will be purchased by the Japanese Government.

The Imperial Government, Nippon and Sobu railroads have raised their passenger rates.

According to late official reports, 43 private railroads are now open for traffic which, with the Imperial Government system, aggregates 3,352 miles. Permanent charters have been granted to 56 companies with an aggregate subscribed capital of $118,287,500 and a paid up capital of $72,374,365 and a total mileage of 3,667 miles, and provisional charters have been granted to 74 companies with an aggregate subscribed capital of $45,827,810, representing a total mileage of 1,834 miles.

Wide Passenger Cars in England

The Great Eastern Railway, of England, says Herapath's Journal, is making one more effort to cope with the morning and evening passenger difficulty, by increasing the width of the carriages to the widest limits of the guard's van, thus giving seating for six persons on each side of a compartment instead of five. An experimental train has been built, consisting of thirteen carriages and two brake-vans, affording a total seating space for 828 passengers. A train of the same number of carriages of the customary width would accommodate 690 persons, so that the new train will carry an additional 138, or, in other words, will afford extra

space equal to the putting on of three more carriages to an ordinary train. This is regarded as a substantial gain and one which overcomes, to a certain extent, the difficulty experienced in regard to the lengthening of the trains.

The new cars are all third class. In the higher classes there are not so many compartments in a train of the same length, as passengers are allowed more room for their knees. It is pointed out by "Transport" that first-class passengers will not stand anything like crowding. The Great Northern has tried to increase the capacity of first-class cars by a slightly different design of seat, with a little widening of the car, but the passengers make a fuss about it.

The Atchison Ferryboat.

The San Francisco & San Joaquin Valley, now controlled by the Atchison, Topeka & Santa Fe, has let to the Union Iron Works, San Francisco, a contract to build a ferryboat to run between San Francisco and Point Richmond, the proposed western terminus of the road. The boat is to be a side-wheel steamer, 238 ft. long, 64 ft. beam and 17½ ft. molded depth. It will draw 10½ ft. of water. The vessel will have a steel hull, and compound engines suitable to make a speed of 16 miles an hour. The cabins will have seating capacity for about 700 persons. The boat is to be done in about 10 months. The distance from San Francisco to Point Richmond is 8 miles.

The road has also let a contract for a tug boat, and will soon order two car floats, each 240 ft. long and 36 ft. wide. The tug boat is to be built by the Fulton Iron Works. It will be 100 ft. long and will draw 9 ft. of water.

Shop Testing of Locomotives.

The term shop testing has been applied to all methods of testing in which the moving parts of the locomotive are allowed motion while the machine, as a whole, is stationary. If, while fulfilling this requirement, conditions of operation similar to those in regular service—the same load, speed and boiler pressure—can be secured and maintained at will, it is apparent that we have found a means of conducting experiments which possesses great advantages, both in convenience and accuracy, over the road test. Every part of the machine is at all times accessible to the experimenter for inspection—a feature of special importance when testing the performance of new devices. In fact, a full understanding of the stresses and strains occurring in the various parts could hardly be had without the opportunity afforded by the testing plant to study carefully the moving machine.—Richard A. Smart in Cassier's Magazine.

A Chicago Tunnel.

Commissioner of Public Works McGann received on April 14 the report of Assistant City Engineer Spengler on the faulty construction of the new northwest land tunnel noted in our issue of Nov. 11, 1898, p. 817. It was charged in the city council that two-ring brick had been substituted for three-ring brick in a large section of the tunnel. The report shows that this was found to be the case in 66 ft. of the tunnel, which defect the contractors will make good. The examination was made for several blocks along the Sheridan road, 38 holes being cut through to reach the work. Attached to Mr. Spengler's report were reports from Messrs. William Sooy Smith and Benezette Williams. General Sooy Smith says he found in some places that the middle ring of brick had been laid without mortar, but that generally the work was good. Mr. Williams' report was practically to the same effect and he pointed out that the laying of the middle ring without mortar might be attributed to the work of unskilled workmen.

Chicago River Improvement.

At the Union League Club April 11 this subject was again under consideration. Congress appropriated $50,000 for the improvement of the river and authorized the Secretary of War to make contracts for the completion of proposed improvements to the amount of $650,000 more. Congress also fixed the depth of the Chicago River at 21 ft., instead of that fixed by the act of June 3, 1896, but also provided that all necessary work of removing and rebuilding bridges and piers and lowering tunnels should be done by the city of Chicago without expense to the United States. Congressman Mann, who represents the Calumet district, took the ground that the city is largely to blame for the present condition of the river and must clear the channel of obstructions before Congress can do its share of the work. Mr. Mann further said that if Chicago wanted commerce to pass through the Chicago River the defects could easily be remedied and that otherwise the commerce would go to the Calumet River.

The Captain of the "Stella."

The pleasure steamer "Stella," which was wrecked just before Easter, with dreadful loss of life, was running in the service of the London & Southwestern Railway. Concerning the event, "Herapath's Journal" says:

The ship Stella was one of the best of her class, well found, with a splendid crew and officers, whose devotion to duty has been sealed with the supreme test of death. Whether the ship was out of her course or by how much, . . . these may be matters for a Board of Trade inquiry. We confess our disinclination to consider them whilst the public mind is thrilled with the heroic conduct of Captain Reeks and his brave officers, who did their duty as men and as British sailors. In all the range of pagan history, when stoicism was the supreme virtue, no instance of more splendid courage can be found superlative to the conduct of the captain of the Stella, who stood unmoved at his post with certain death staring him in the face, doing his duty up to the last, providing for the safety of the women and children first, then telling every man to look out for himself. The countrymen of such a man will long treasure in memory the heroism of the captain who expiated all possible faults by such absolute self-sacrifice.

Mr. Arthur's Views.

Mr. P. M. Arthur, Chief of the Brotherhood of Locomotive Engineers, gave evidence before the Federal Industrial Commission at Washington last week. He says that in the United States and Canada there are 36,000 locomotive engineers, of whom 90 per cent. are members of the Brotherhood. Mr. Arthur said that the examination of men on some railroads was unfair, but the only specification which he made was that men who had successfully run a locomotive for 25 years were discharged because they could not sort out different shades of worsted. The Brotherhood has a fund for use only in case of a strike which now amounts to $100,000. The men prefer to secure their life insurance in the Brotherhood, but their objection to railroad insurance funds is not serious where membership is voluntary. Mr. Arthur had heard rumors of blacklisting, but knew of no proofs of such acts on the part of a railroad. Formerly Mr. Arthur was in favor of compulsory arbitration, but it had been in such ill favor among members of his order that he does not now advocate it. He favored arbitration. The present arbitration law was desirable in its effect on public opinion in case either party should refuse to arbitrate.

New Railroad Tax Law in Ontario.

An act amending the tax laws of the Province of Ontario has recently become a law in that Province. It provides that every steam railroad company shall pay each year a tax of $5 per mile for each mile operated. Street railroads are to pay annually a tax of $20 per mile where the line within the city does not exceed 20 miles; $35 per mile when the line exceeds 20 miles but does not exceed 30; $45 per mile when the line exceeds 30 miles but does not exceed 50; and $60 per mile when the whole line within the city exceeds 50 miles. In the steam road the mileage does not include second track, but in the street roads each mile of track is included, whether first or second track. Telegraph companies are to pay one-tenth of one per cent. of the paid-up capital, and telephone companies one-eighth of one per cent. Express companies operating over 400 miles of line shall pay a tax of $800, and $125 more for each additional 400 miles, or fraction thereof. Companies hiring or leasing sleeping cars or parlor cars shall pay a tax of one-third of one per cent. on the capital of the company invested in such rolling stock in use in the Province during the preceding year. The first taxes under the law are payable Nov. 1 next, and after that on June 1 of each year.

American Shipbuilding Company.

The officers and directors of the consolidated shipbuilders of the Great Lakes, which will be known as the American Shipbuilding Co., are as follows: President, W. P. Brown, Chicago Shipbuilding Co.; Vice-President, Robert L. Ireland, Globe Iron Works Co., Cleveland; General Manager, James C. Wallace, Cleveland Shipbuilding Co.; Secretary and Treasurer, R. T. Wetmore, American Steel Barge Co., New York; Executive Committee: W. L. Brown, Chicago; A. McVittie, Detroit; James C. Wallace, Cleveland; Robert L. Ireland, Cleveland; Luther Allen, Cleveland; Colegate Hoyt, New York, and W. E. Fitzgerald, Milwaukee. Board of Directors: W. L. Brown and H. H. Porter, Jr., of Chicago; Robert Wallace, James C. Wallace, H. M. Hanna, L. C. Hanna, Robert L. Ireland, and Luther Allen, of Cleveland; Colegate Hoyt, of New York; Samuel Mather, of Cleveland; W. E. Fitzgerald and Andrew M. Joys, of Milwaukee; A. McVittie and Gilbert N. McMillan, of Detroit, and W. T. Coleman, of New Jersey. The company is incorporated under the laws of New Jersey, with an authorized capital of $30,000,000. The actual capital is $14,000,000, $7,000,000 in 7 per cent. non-cumulative stock and $7,000,000 in common stock. The headquarters of the company will be in Cleveland.

The Edwards Electric Headlight.

Passenger locomotive No. 170 of the Cleveland, Cincinnati and Indianapolis, is now equipped with one of Edgar A. Edwards' electric headlights. This headlight which is said to be of 6,000 candle power, has fixed in front of it a supplementary reflector which throws about one-third of the rays (projected horizontally by the parabolic reflector) directly up into the sky in a vertical line. This pencil in the sky, perhaps 2,000 ft. high, or higher, indicates the location and movements of the train to any observer anywhere within a wide circle. As a main element of the value of the electric healight is this function of telling at a distance where the light is, this improvement ought to be popular. Even with the rays all projected horizontally, enginemen of opposing trains have often found advantage in the use of the electric headlight, and have, on occasion, been enabled to thus avoid a collision which otherwise would have occurred with the train carrying the light. With horizontal rays, however, the intervention of hills interferes with the usefulness of the light on curves, and an engine going down a steep grade would, of course, throw the rays so low that the light in the sky would often be too faint to show far. The most marked benefit has been found in situations where the light from an engine moving up grade has shown in the sky above stations or other places where the intelligence that a train is approaching is always appreciated. A light which constantly throws a pencil of light high in the sky will therefore make this benefit available at many additional places.

A Methodical Tramp.

Last month two gentlemen of fortune left New York to go to Gettysburg, O., by rail without paying their fares. One of them kept a diary of their journey, a leaf from which has come into our possession, and is reproduced below almost exactly as it was written. The handwriting is a very good Spencerian script, showing the value of public school education.

March 13th.—Left New York 12:30 noon, and arrived at Philadelphia at 5:30 P. M. Distance, 90 miles.
March 16th.—Left Philadelphia at 10:30 A. M., and arrived at Harrisburg at 4:30 P. M. Distance, 105 miles.
March 17th.—Left Harrisburg at 11 A. M., and arrived at Huntindon [Huntngton] at 6 P. M. Distance, 72 miles.
March 18th.—Left Huntindon at 10 A. M., and arrived at Altonna [Altoona] at 4 P. M. Distance, 45 miles.
March 18th.—Left Altonna at 6 P. M., and arrived at Dairy [Derry] at 2 A. M., March 19th. Distance, 35 miles.
March 19th.—Left Dairy at 12 A. M., and arrived at Pittsburgh, at 6 P. M., March 20th. Distance, 75 miles.
March 24th.—Left Pitts. 10 ... M., and arrived at Scio, Ohio, at 7:30 A. M. Distance, 77 miles.
March 25.—Left Scio at 9:30 A. M., and arrived at Newark at 9:30 P. M. Distance, 80 miles.
March 26th.—Left Newark at 10 A. M., and arrived at Columbus at 2 P. M. Distance, 33 miles. Left Columbus at 4:30 P. M., and arrived at Plain City at 6 P. M. Distance, 17 miles.
March 27th.—Left Plain City, Ohio, at 3 P. M., and arrived at Gettysburg at 9 P. M.
Left Gettysburg at
Here the diary stops abruptly. The author is doing 30 days in the workhouse at Dayton for V. R. L.

Water Tube Boilers in the Navy.

We must have boilers that are capable of being divided into small units, and that are capable of quickly generating steam from a cold boiler. Water-tube boilers must be used on men-of-war, but we find a great deal concerning the type of water-tube boiler that must be used. An increase in the space on board ship devoted to machinery, above the large amount already so alloted, must be avoided. Inasmuch as the grate surface of the new boilers must be greater for the same power developed at the engines, than that in the type of boilers now used, there would naturally be an increase in the boiler-room space required. This must be avoided; and this can be done only by increasing the ratio of grate surface to floor space occupied above that in cylindrical boilers. This ratio must be a large one, and the larger the better. The number of attachments must be as small as possible to minimize the work of busy men. No great efficiency in firing must be required to attain a good efficiency of the boiler. This follows from the fact that the firemen in the navy in time of war are not equal to doing particularly good firing. The fact that no great efficiency in firing must be expected or required, means that the complete combustion of the fuel must not be attempted in one chamber above the fire. The care of the boiler while steaming must not be attended with any great difficulty. The parts of the boiler must be afforded a free expansion to make the quick raising of heavy fires under a cold boiler possible without danger of causing leaks. For the same reason, a good, free circulation of the water in the boiler must be assured. As it is not possible to entirely keep salt water out of the boilers, they must be capable of use with salt water, and the interior must be accessible for cleaning. It must be possible to remove salt and other scale from the water side of the heating surfaces. The tubes must, therefore, be straight tubes and not of very small diameter.—J. K. Robinson, U. S. N., in Cassier's Magazine.

The Manchurian Railroad.

Chinese newspapers say that it is believed that the Chinese Eastern Railroad will run from New Hauie to Port Arthur by Kwang-cheng-tsi, Haicheng and Tashihchiao. There will be a branch from New Hauie to Vladivostock and one to Kirin from Kwang-cheng-tsi; also one to New-Chwang from Tashihchaio.

Traffic in and Capacity of the Boston Subway.

The Boston Transit Commission, responding to an order of the Lower House of the Legislature, has made a report on the way in which the passenger traffic through the subway is being managed by the Boston Elevated Railroad and on the possibilities of more fully utilizing the subway and better expediting travel. The report says that last fall, during the first two months of the operation of the subway as a whole, the traffic on the Park St. loop was delayed at the Park St. platforms. The Elevated Railway Company, however, soon increased the number of berths at the platforms and put up signs notifying passengers in advance as to the exact point at which each car was to stop. On December 9 last, before these changes were fully developed, it was found that 195 cars passed around the loop at Park St. in the hour of maximum traffic, that is, between 5 and 6 o'clock in the afternoon. This traffic did not result in congestion of cars within the subway. The card indicator then in use could be seen only from a portion of the platform. Electric indicators at each end of the platform readily visible from all parts of the platform and from the stairs as well have since been installed, and the method of handling the traffic has in other respects being materially improved.

Since December 9, 1898, the commission has had counts made of the number of cars passing over tracks in the subway in the maximum hour on a few days only. The following is the result of these counts so far as the Park St. loop tracks are concerned: Thursday, December 15, 1898, 176; Wednesday, January 18, 1899, 187; Wednesday, March 29, 155; Thursday, March 30, 175; Tuesday, April 4, 181. It is evident that if, with the only partially developed methods of handling passengers and cars in use on December 9, 1898, 195 cars per hour could be handled without congestion, the improved methods of operation now in use will permit the running of a larger number of cars, and that the limit of traffic capacity on these tracks has not been reached. Admirable as are the present methods of operation, there is opportunity for still further improvement in the future.

. . . The subway is utilized at the present time to the extent of the business which is brought to it. It is capable of doing more business when more is offered. If congestion in any part should occur in the future, relief should be sought, as it has been sought at the Park St. station, by improved methods of operation and also by transferring traffic from the overburdened tracks or portions of platforms to those less heavily loaded. . . . The present methods of taking up tickets and transfer checks in the cars in the subway is a source of considerable delay. This system is particularly prejudicial to rapid transit where the stations are so near together, as they must necessarily be in the very heart of the city. If the company could devise some method to avoid these delays by taking tickets from passengers as they enter the subway, much would be accomplished toward promoting rapid transit. . . .

Technical Schools.

Purdue University.—During the year 1899-1900 the following special lectures will be given at Purdue University in connection with the course in railroad engineering: "Economics of Equipment Maintenance," by Mr. S. P. Bush, Superintendent of Motive Power of the Pennsylvania Lines West of Pittsburgh; "What the Interstate Commerce Commission is Doing for the Railroads and the Public," by Mr. Martin A. Knapp, Chairman Interstate Commerce Commission; "Locomotives, Their Design and Maintenance," by Mr. W. H. Marshall, Assistant Superintendent of Motive Power, Chicago & Northwestern; "Railroads and the Paris Exposition," by Mr. W. A. Smith. Messrs. George B. Leighton, President Los Angeles Terminal; W. L. Taylor, Attorney-General of the State of Indiana, and H. M. Sperry, of the Union Switch Signal Co., will also lecture on subjects to be announced later.

University of Illinois.—The State Legislature, which adjourned April 14, appropriated $587,000 for the use of the University during the next two years. Of this amount $150,000 is for a group of buildings and equipment for the College of Agriculture, plans for these buildings being already under consideration; $40,000 is for a Women's Building and dormitories; $10,00 is for the Library and $10,000 for an independent water plant for the University to be established at once. The appropriation just made, together with the funds from the Federal land grant, will give the University an income of $400,000 a year for the next two years and enable it to add largely to its equipment.

Of this appropriation Governor Tanner on April 22 vetoed items amounting to $99,166.61, including those

for a Women's Building and its equipment and maintenance, for additions to the Library and for additions to various apparatus. This action was most unexpected to the University and to all who are interested in its progress.

The Senior Class in Mechanical Engineering is spending this week in making an inspection trip to Chicago, the party being in charge of Profs. L. P. Breckenridge and W. H. Van Dervoort. The class left Champaign on Monday, April 24, making dynamometer car tests from Champaign to Chicago and will make further tests of the same kind on the return trip, May 3. During the nine days in Chicago visits will be made to the works of Pullman's Palace Car Co. and to the Burnside shops of the Illinois Central, where some power tests will be made. The program also includes, among others, visits to the Illinois Steel Co.'s works, the Chicago Ship Building Co.'s yards, the Link Belt Machine Co.'s works, a station tests at the 12th St. station of the Chicago Edison Co., and a visit to the Chicago pumping stations.

LOCOMOTIVE BUILDING.

The Brooks Locomotive Works is building one locomotive for the American Railway & Land Co.

The Rogers Locomotive Co. is building two locomotives for the Galveston, Houston & Henderson.

The Pittsburgh Locomotive Works is building four locomotives for the Hoshu Railroad of Japan.

The Baldwin Locomotive Works is building one mogul locomotive for the Williamsville, Greensville & St. Louis.

The Baldwin Locomotive Works is building four consolidation engines for the Western New York & Pennsylvania.

The New York Central & Hudson River has ordered 10 10-wheel passenger engines from the Schenectady Locomotive Works.

It is stated that the Brooks Locomotive Works has received an order for five consolidation engines from the Buffalo, Rochester & Pittsburgh.

The Terminal Railroad Association of St. Louis is having one mogul and one six-wheel switching engine built by the Baldwin Locomotive Works.

The Brooks Locomotive Works deny having received an order for eight passenger engines from the Lake Shore & Michigan Southern, as stated in an exchange.

The engines which the Cooke Locomotive Works are building for the Barry Railroad, noted in our issue of April 14, will be six-wheel connected, with trailing trucks.

We are advised that the report that the Baldwin Locomotive Works has received an order from the Cumberland Construction Co. for locomotives for the Tennessee Central is not authorized.

The Standard Railway Supply Co., Fisher Building, Chicago, acting as purchasing agents for the Peoria & Peking Terminal, a new belt railway at Peoria, is receiving bids on two six-wheel switching engines.

Thirty-five of the 70 locomotives to be built for the Chicago & Alton by the Baldwin Locomotive Works will be moguls, with 20 in.x28 in. cylinders, 57 in. driving wheels, weight in working order about 151,000 lbs., with about 135,000 lbs. on drivers. No decision has been reached regarding the classes of the remaining number.

The 15 engines ordered by the Hocking Valley, referred to in our issue of March 31 (10 to the Pittsburgh Locomotive & Car Works and five to the Baldwin Locomotive Works) will be of the consolidation type for July-October delivery. The specifications call for the following: Weight, total, 134,000 lbs., on drivers, 120,000 lbs.; cylinders, 20 in.x26 in.; driving wheels, 54 in. in diam.; boiler, Belpaire, Shelby cold drawn steel; tubes, 240, 2 in. in diam. and 13 ft. 10 in. long; fireboxes, homogeneous steel 108 in. long and 41 in. wide; working steam pressure, 180 lbs.; tender capacity, 4,500 gals. of water and 320 cubic feet of coal; air brakes, New York; axles, hammered steel; brake beams, Sterlingworth; brake shoes, Ramapo; couplers, Buckeye; piston and valve rod packings, Jerome; safety valves, Coale; lubricators, Detroit and Michigan; springs, French and Baldwin; steam gages, no particular make specified; tires, driving wheel, four Latrobe, three Midvale and eight Standard. Three of the engines will be equipped with Metropolitan injectors, seven with Hancock inspirators, and five with Ohio injectors.

CAR BUILDING.

Murray, Dougal & Co. are building 40 freight cars for the Southern Cotton Oil Co.

The Illinois Car & Equipment Co. is building 30 cars for the Virginia & Southwestern.

The St. Paul & Duluth has ordered 300 box cars from the American Car & Foundry Co.

The Midland Terminal has issued specifications for 100 30-ton box cars to have Diamond trucks.

The Manistee & Grand Rapids is having 10 freight cars built by the Michigan-Peninsular Car Co.

The Georgia Central, it is reported, will build some freight cars at its own shops, but we have nothing official.

The Erie denies that it will build café cars at its shops, as reported a short while ago by an exchange.

The Toledo & Ohio Central is receiving bids for 500 standard and 50 special coal cars of about 70,000 lbs. capacity.

The Indiana, Illinois & Iowa has, on account of price, postponed the letting of the box cars noted in our issue of April 7.

We are officially informed that the Wisconsin Central is not considering buying equipment, as reported recently by an exchange.

We understand that the Chicago & Alton is working on specifications for freight cars and will probably ask bids in about two weeks on about 2,000 coal and box cars.

The American Steel & Wire Co. will soon be in the market for about 300 50-ton flat cars for transporting pig iron and steel billets, the contract to be let within three weeks.

The Standard Railway Supply Co., Fisher Building, Chicago, acting as purchesing agents for the Peoria & Pekin Terminal, a new belt railway at Peoria, is receiving bids on 70 coal cars.

The Barney & Smith Car Co. is building six cars for passenger service for the Chicago, Milwaukee & St. Paul. They are for May 15 delivery and will be 50 ft. long and 10 ft. wide. The specifications call for iron axles, metal brake beams, Westinghouse brakes on all wheels, Janney-Miller couplers, Forsyth curtain fixtures, French springs, Barr flush vestibules and C., M. & St. P. standard double bolsters, brasses, draft rigging, heating system, journal boxes and journal box lids, electric lighting system, paint and six-wheel trucks.

In our issue of April 7 we noted that the Chesapeake & Ohio had placed an order with Pullman's Palace Car Co. for 1,000 box cars. These will be 60,000 lbs. capacity, will weigh 31,300 lbs., will be 36 ft. long inside, 8 ft. 2¼ in. wide inside, and 7 ft. 5½ in. high. They will be built of wood, with wood underframes. According to specifications they will have Pullman iron axles, C. & O. standard bolsters, Diamond brake beams, cast iron brake shoes, Westinghouse brakes, U. S. Bronze Co.'s brasses, Tower couplers, Chicago grain doors, Q. & C. fixtures, Butler drawbar attachments, cast iron M. C. B. journal boxes, M. C. B. standard journal box lids, Chicago-Cleveland roofs, C. & O. standard diamond trucks and Griffin wheels.

On March 24 we noted an order for 500 coal cars placed by the Wabash with the American Car & Foundry Co. to be built at its Madison, Ill., works. These cars will be of 80,000 lbs. capacity, 36 ft. long, 8 ft. 6½ in. wide, 44¾ in. high, and will weigh 32,500 lbs. The Wabash also ordered some time ago from the same builders 500 box cars of 60,000 lbs. capacity, 36 ft. long, 8 ft. 4 in. wide, and 7 ft. 9 in. high, to weigh 32,500 lbs., and 200 60,000 lb. furniture cars, 45 ft. long, 8 ft. 7 in. wide, and 8 ft. 8 in. high, to weigh 39,000 lbs. The furniture and box cars and 300 of the coal cars will have diamond trucks, the other 200 coal cars having Kindl trucks. On the 500 box cars Shickle, Harrison & Howard cast steel bolsters will be used, on the 200 furniture cars Simplex bolsters, and on 300 of the coal cars American steel bolsters. Hutchins roofs will be used on the box and furniture cars, and all the cars will be equipped with Westinghouse air brakes, Sterlingworth brake beams, filled brasses, and M. C. B. standard brake shoes and journal boxes. Hein couplers will be used on the furniture cars and Gould couplers on the box and furniture cars. The box and coal cars will have Wabash standard draft rigging.

The Kansas City & Leavenworth Railway will want two open and 20 closed motor cars. Address C. O. Evarts, Produce Exchange Building, Cleveland, O. (See Electric Railroad Construction column.)

H. B. Sproul, Purchasing Agent for the proposed Staunton, Middlebrook & New Port Electric, informs us that the proposed equipment of the road will be three open and two closed motor cars, for which bids will probably be wanted by July 1. (See Electric Railroad Construction column.)

BRIDGE BUILDING.

ALLEGHENY, Pa.—Senator Magee's bill to permit the purchase by the County of Allegheny of the bridges conecting Allegheny and Pittsburgh, was passed April 19.

ATLANTA, GA.—A bill has been introduced in the City Council requiring the Atlanta Consolidated St. Ry. Co. to build an iron bridge across the railroad tracks on Whitehall St.

BOSTON, MASS.—Governor Wolcott has signed the Malden bridge bill, which requires the building of a new bridge across the Mystic River. (Feb. 3, p. 90.)

BURNEY, CAL.—A bridge will be built at this place by the County Commissioners. Ismael Monroe Supervisor.

CAMPBELL, CAL.—The Supervisors are considering a new bridge over a creek in Campbell, Santa Clara County.

CARVERSVILLE, PA.—A petition has been prepared to have the bridge in Carversville enlarged and raised.

CHICAGO, ILL.—The new Northwestern railroad bridge over the Chicago River, and the old Kinzie St. bridge were damaged by fire, April 18 to the extent of about $5,000. The cause of the fire is being investigated, but is not yet determined. It started along the wharves and did not reach the bridges until the outgoing suburban evening trains had departed. The fire was easily put out, and the new iron railroad bridge was not seriously damaged, but the Kinzie St. bridge, which was built in 1871, will probably be replaced by a new structure.

COHOES, N. Y.—The Mayor is considering the advisability of a new bridge over a branch of the Mohawk River at Ontario St. The present bridge has been condemned and is now closed to traffic.

CUMBERLAND, MD.—A joint survey by the Baltimore & Ohio and the West Virginia Central & Pittsburgh has been made and plans prepared for the proposed new double track bridge over the Potomac River to connect the W. V. C. & P. yards at Ridgely, W. Va., with the B. & O. yards, in South Cumberland.

ELLENSBURG, WASH.—Commissioners have made arrangements for a new bridge across the river at the point where the old Leonhard bridge now stands to be built some time next fall.

FLUSHING, L. I.—The drawbridge over Flushing Creek, which has been closed to traffice pending repairs, is considered too small and it is reported that a new bridge, estimated to cost $150,000, will be built.

GREENFIELD, MASS.—The Montague Electric St. Ry. will need one bridge, partly of iron, on the proposed road. Clapp & Abercrombie are the engineers.

HARTFORD, CONN.—The Berlin Iron Bridge Co., of East Berlin, Conn., has the contract for building the new bridge on Hartford Ave., in East Hartford, across the Hartford meadows. It is to cost $119,907 and be completed within five months from May 1. (March 31, p. 233.)

HONOLULU, H. I.—Sealed bids will be received by Jas. A. King, Minister of the Interior, until May 15 for seven steel bridges, to be delivered in Honolulu and Hilo. Specifications are at the office of the Superintendent of Public Works.

INDIANAPOLIS, IND.—A meeting of business men was held April 18 to advocate the building of a bridge over White River at Ray St. Wm. Schaefer, Chairman.

The Indianapolis & Martinsville Rapid Transit Co. will build several bridges. (See Electric Railroad Construction column.)

KANSAS CITY, MO.—The stockholders of the Omaha, Kansas City & Eastern will vote May 15 on the issue of bonds to build a bridge across the Mississippi. (See Railroad News Column.)

LA GRANDE, ORE.—The Bullen Bridge Co. has the contract for the building of one bridge over Grande Ronde River, on the road leading from Phy's Point to Summerville, one bridge over said river east of Imber and one bridge over Powder River on the road leading from Baker City to Medical Springs. Each are steel combination. The prices are: (1) $2,690; (2) $2,190; (3) $1,790.

LAKE TOWN, UTAH.—The Commissioners of Rich County will receive bids for a steel bridge 155 ft. long and 16 ft. wide, to be built across Bear River, at a point near the "Old Bridge Crossing." The bridge must be of one span only. N. M. Hodges, County Commissioner, Lake Town; John Kennedy, Chairman.

MAYFIELD, CAL.—The County Surveyor has been authorized to prepare plans and locations for a bridge over the San Antonio Creek, between Mountain View and Mayfield. H. A. Pfister, Clerk, Santa Clara County, San Jose.

MT. GILEAD, O.—The Central Ohio Electric Ry. will need a bridge at this place. (See Electric Railroad Construction column.)

NEWPORT, ORE.—The County Commissioners will receive bids for a bridge across the Skunk Creek.

NEW YORK, N. Y.—The Board of Estimate has authorized the issue of $200,000 bonds for the new bridge over Newton Creek at Grand Ave., Borough of Brooklyn. (March 3, p. 159.)

NORRISTOWN, PA.—Sealed proposals will be received by the Commissioners of Montgomery County until May 17, for the superstructure of a steel bridge over Saw Mill Run in the Borough of Norristown. Specifications are on file in the office of the Commissioners, Charles M. Reed, John Hampton, D. K. Graber, Alan W. Corson, Engineer, D. H. Hitner, Clerk.

OTTAWA, ONT.—The Union Bridge Co. has the contract for rebuilding the Ottawa and New York International bridge over the south channel of the St. Lawrence River, which collapsed on Sept. 16 last. The Degnon-MacLean Construction Co. of New York, has a contract for the foundations.

PHONETON, O.—The National Traction Co. will need several bridges. (See Electric Railroad Construction column.)

PITTSBURGH, PA.—The Schultze Bridge & Iron Co. has secured the contract for rebuilding the Main St. bridge, West End, at $10,105.

The Wilkinsburg & East Pittsburgh St. Ry., which is the extension of the Monongahela St. Ry., will need several bridges on the extension already begun to East Pittsburgh.

PLACERVILLE, CAL.—It has been decided that the Uniontown bridge, which was recently damaged, should be rebuilt. Thos. Stevenson, Supervisor, Pilot Hill.

PRINCE, W. VA.—The Chesapeake & Ohio will build a new bridge across the New River at this place. (Railroad Construction column.)

SALT LAKE CITY, UTAH.—The Committee on Irrigation has recommended to the Council the building of a new bridge over the Jordan on North Ninth St., estimated by the City Engineer to cost $1,800.

SCHWENKSVILLE, PA.—The Montgomery County Jury has recommended a new bridge over the Perkiomen.

SONORA, CAL.—A bridge will probably be built over the Stanislane River, at Robinson Ferry. D. M. Ortega, Clerk, Sonora.

TROY, N. Y.—A bill to permit the Albany Ry. Co. to build a bridge in Troy at the foot of 22d St., has been passed.

WATSONVILLE, CAL.—The Santa Clara County Supervisors have accepted plans for the Aptos bridge. Bids will be received for a steel structure and also for one of wood and stone.

WILKESBARRE, Pa.—The County Commissioners expect to advertise for proposals next month for the following bridges, which were recommended by the Grand Jury at the November session: Black Creek Township, 1 iron, $1,600; Salem Township, 3 stone arch, $700; Sugarloaf Township, 1 stone arch, $1,350; Fairmount Township, 4 stone arch, $800; Butler Township, 1 stone arch, $450; Huntington Township, 2 stone arch, $1,000; White Haven, 1 iron, $2,000; Bear Creek Township, 2 stone, $1,100; Foster Township, 1 stone, $800; Nescopeck Township, 2 stone, $600; Denison Township, 1 stone, $600; Lake Township, 2 stone, $500 Dorrance Township, 1 stone, $350; Franklin Township, 1 stone, $400; Plymouth Borough, 2 iron, $1,400; Jackson Township, 2 stone, $600; Plains Township, 2 iron, $1,500; Union Township, 4 stone, $415; Wright Township, 1 stone, $400; Wilkes-Barre, 1 iron, $1,200; Plymouth Township, 1 stone, $300; Fairview Township, 1 stone, $450; New Columbus, 1 iron, $1,500; Lehman, 2 stone, $400; Nanticoke, 1 iron, $625; Hazle Township, 1 stone, $1,200; Ross, 4 stone, $695; total, $22,935. Contracts will not be let for all the bridges as only $14,000 is available.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Pullman's Palace Car Co.—Quarterly, $1.50 per share, payable May 15.

Georgia Southern & Florida.—Semi-annual, $2.50 per share, payable May 10.

Keokuk & Des Moines.—Preferred, ½ per cent.

Metropolitan St. Ry. (Kansas City).—Quarterly, 1 per cent., payable May 1.

Engineers' Society of Western Pennsylvania.

The one hundred and ninety-fourth meeting of the Engineers' Society of Western Pennsylvania was held in the Society's house, Pittsburgh, April 18, the President, Mr. Harry J. Lewis, being in the chair and thirty-five members and visitors present.

The paper of the evening, entitled "Quick Revolution Engines," was read by Mr. Arthur Herschmann. The author took up the question of the details of construction of high speed engines as shown by the best practice in America, England, and Germany, and discussed the different types of cutoffs, piston packings, lubrication, etc. At the conclusion of the reading of the paper there was a full discussion upon the points raised.

A Financial Committee has been appointed by the Society with a view of securing funds with which to purchase a permanent home and for similar objects.

Freight Claim Association.

This association will hold its eighth annual meeting at Mobile, Ala., May 3. Special rates for entertainment have been arranged for at the Battle House. The sleeping car companies will grant half rates to the members who take receipts for fares paid. Secretary Warren P. Taylor, of Richmond, has sent out to members the committee reports which are to be presented at the meeting. The Committee on Constitution and By-Laws recommends a number of amendments. The Committee on Loss and Damage Rules makes a long report on car seals and seal records, and on regulations for promptly forwarding stray freight in accordance with marks. This committee also reports on several subjects in conjunction with the overcharge committee. The last-named committee also makes a number of important recommendations.

Engineers Club of St. Louis.

The meeting of April 19 was arranged in celebration of the 30th anniversary of the club's incorporation. It began with a dinner, and the programme was varied by a good deal of music. Mr. Bryan's paper was the main feature of the evening. It gave the history of the club from its inception, and also notes on each of the past presidents, charter members, and other prominent persons, who have been connected with the club, telling something of each one's work. Portraits were shown of all by means of a stereopticon, and in many cases some of the principal works with which they had been identified. The paper was very complete, and is a valuable addition to the records of the club.

The remarks by members consisted of short reminiscences; Mr. Wm. Wise, Mr. R. E. McMath, Prof. C. M. Woodward, Mr. M. L. Holman and Col. E. D. Meier being called upon and responding. A congratulatory telegram from Mr. Wm. Einbeck, one of the charter members was read.

Western Railway Club.

A meeting of the Western Railway Club was held Tuesday afternoon, April 18, at the Auditorium Hotel, Chicago. The Committee on M. C. B. Couplers, consisting of Messrs. F. A. Delano, J. N. Barr, Thomas Fildes, John Mackenzie and P. H. Peck submitted its final report, which was received and the Committee discharged. The report will be sent to the Coupler Committee of the M. C. B. Association as the opinion of the Western Railway Club.

The report was quite short, and the statement was made that it was considered wholly impossible to attempt the adoption of a standard knuckle or coupler at this time, but that improvement is to be looked for through the operation of the law of evolution; the survival of the fittest. It was recommended that couplers should be purchased on specifications, and in this connection attention was called to the importance of having the lines of coupler coincide with the M. C. B. lines when referred to the center line of the shank, produced; the length of the guard arm and the location of the shoulder and pivot pin hole should be definitely fixed; attention should be given to the improvement of the uncoupling and locking devices and railroads should keep an accurate record of all couplers failing in service. The Committee was of the opinion that the lines laid down by the M. C. B. Association will prove entirely satisfactory, and that there is no necessity for any divergence from them. It was urged that a gage be adopted which would slip over the shank of the coupler and so fix absolutely the relation of the center line of the shank to the contour lines; drawings of such gages, one designed by Mr. Barr and one by Mr. Fildes were shown and the statement made that the M. C. B. Coupler Committee had also designed a similar gage which promised to be satisfactory. It was held that the M. C. B. coupler has proved greatly superior to the link and pin coupler, and that what is now needed more than anything else is strict compliance with the M. C. B. contour lines and rigid requirements as to strength. There was little discussion.

Considerable time was spent discussing proposed changes in the M. C. B. Rules of Interchange.

American Society of Mechanical Engineers.

The 39th meeting of the Am. Soc. M. E. will be held in Washington, D. C., May 9 to 12, at the Arlington Hotel. The programme follows:

Tuesday Afternoon.—Left free.

Tuesday Evening.—Opening session and informal reception by the President and Officers of the Society; held in the new Corcoran Gallery of Art. Opening address of welcome at 8.45 P. M., with special reference to Washington Monument, by Col. T. A. Bingham, U. S. Engineers, in charge of Public Buildings and Grounds.

Wednesday Morning.—Business session for the Reports of Tellers, for the consideration of the Code for Conducting Boiler Trials, and for General Business. At the close of such matters, professional papers will be taken up as follows:

Stanwood, J. B.: Standards for Direct-Connected Generating Sets.

Hale, R. S.: Boiler and Furnace Efficiencies.

Emory, F. L.: Test of a Steam Separator.

Henning, Gus C.: Investigations of Boiler Explosions.

Wednesday Afternoon.—Reception of the Society by President McKinley in the Executive Mansion at 3 p. m.

Wednesday Evening.—Professional Papers as follows:

Emory, F. L.: Relation Between Initial Tension and Power Transmitted by a Belt.

Newcomb, C. L.: Experiments on Various Types of Fire Hydrants.

Bissell, G. W.: Experiences with Deep-Well Pumping Rods.

Nagle, A. F.: Pipe Flanges and their Bolts.

Henderson, George R.: Manufacture of Car Wheels.

Thursday Morning.—Professional Papers as follows:

Bolton, R. P.: Equipment of Tall Office Buildings in New York City.

Bull, Storm: The Central Heating Plant of the University of Wisconsin.

Darling, E. A.: The Power Plant of a University.

Alden, G. I.: The Plunger Elevator.

Pratt, C. R.: Elevators.

Thursday Afternoon.—Excursion. Meet at Navy Yard gate at 2.30, to visit Gun Factory, Trial Tank for ship models, Ordnance Musuem and Ships.

Thursday Evening.—Reception to the Society by Mrs. George Westinghouse.

Friday Morning.—Professional Papers as follows:

Quereau, C. H.: The Allen Valve for Locomotives.

Fritz, John: Rolling Mill Fly-Wheels.

Gordon, F. W.: New System of Valves for Steam Engines, Air Engines and Compressors.

Friday Afternoon.—Excursion to Mount Vernon.

Friday Evening.—Visit to Washington Monument which will be lighted for the occasion. Visit to the Congressional Library. The building will be brilliantly lighted, and opportunity will be given to see in operation the lighting and ventilating machinery, and the book conveyors; under the personal guidance of Mr. Bernard Green, Superintendent.

PERSONAL

(For other personal mention see Elections and Appointments.)

—The marriage of Miss Mary Newell Mallory to Mr. J. T. Harahan, Second Vice-President of the Illinois Central RR., took place at the bride's home in Memphis, Tenn., April 19.

—We regret to have to record the fact that Mr. William Forsyth has resigned the position of Superintendent of Motive Power of the Northern Pacific Railway. He expects to return to Aurora, Ill., for a summer vacation. From the first, Mr. Forsyth's friends have feared that the work would be too hard for a man of only moderately robust physique, although he is one of the most accomplished mechanical engineers in the railroad service.

—Mr. H. M. Brinckerhoff, Superintendent of Motive Power of the Metropolitan Elevated, of Chicago, has been promoted to be Assistant General Manager of that road, to succeed Mr. W. E. Baker, in charge of the operating department. Mr. Brinckerhoff graduated from Stevens Institute of Technology with the degree of Mechanical Engineer, and was for two years with the West End Street Ry., of Boston, and the Belt Line Street Ry., of Utica., on line and car work and power station operation. Later he was Assistant Electrical Engineer of the Columbian Intra-Mural Ry., at the World's Fair, assisting in planning, equipping and operating that line. During the construction of the Metropolitan Elevated he was Electrical Engineer of the road, which position he held until appointed Superintendent of Motive Power a few months ago.

—Mr. Arthur Manning Waitt, General Master Car Builder of the Lake Shore & Michigan Southern, has been appointed Superintendent of Motive Power and Rolling Stock of the New York Central & Hudson River RR., to succeed Mr. William Buchanan, and we should expect that he would succeed admirably in the place. He is a thoroughly modern man and a graduate in civil engineering of the Massachusetts Institute of Technology. He has been in railroad work since 1879, having begun that service when he was 21 years old. He was born Oct. 24, 1858. Up to 1884 he served as draughtsman in the car and locomotive office of the C. B. & Q., and chief draughtsman in the locomotive department of the Eastern (Boston & Maine). In 1884 he became General Foreman of the car department of the Eastern Railroad, and in 1889 he became Assistant General Master Car Builder of the Lake Shore & Michigan Southern. In 1892 he became General Master Car Builder of the same road. It will be seen that his responsible work has been quite strictly in the car department. Nevertheless, his training and his experience have given him good command of motive power details, and a man of his education and caliber does not need to be a locomotive specialist in order to intelligently direct the policy of the locomotive department. He has administrative power, which in these days is the first essential for the head of a railroad department. He has besides that comparative youth, a robust physique and a resolute and energetic mind.

—The resignation of Mr. William Buchanan, Superintendent of Motive Power of the New York Central & Hudson River Railroad, has been in the air for some time, but it has been impossible to say anything about it. It appears now that it was accepted by the Board of Directors on Thursday of last week. Mr. Buchanan was born in Scotland, March 6, 1830. He came to the United States as a boy, and in 1847 entered the service of the Albany & Schenectady Railroad as an apprentice in the machine shops at Albany. In 1849 he went to the Hudson River Railroad and worked for a few years in the machine shops and as a locomotive runner. In June, 1853, he became Master Mechanic of the Southern Division of the Hudson River Railroad, and in 1881 he was made Superintendent of Motive Power of the entire New York Central system. The title was changed later to Superintendent of Motive Power and Rolling Stock. It will be seen from these notes that Mr. Buchanan has been at work as an apprentice, a machinist, an engine runner and as an officer in the mechanical department for 52 years, and that he has the remarkable record of having been continuously in the service of what is practically the same railroad company for 50 years. By his mechanical talent, his Scotch persistence and his extraordinary physical and mental power, he has made a mark on locomotive practice in the United States such as few men have been able to accomplish.

Mr. Buchanan has often been called conservative. If we use that word in its proper sense, he was. The word is from the Latin conservere, to keep, preserve, and a conservative person is defined as one who aims to preserve from injury or loss. This Mr. Buchanan did, and in this he was doing the sort of thing which has made us the most really and permanently progressive race that has yet appeared on the earth. With Mr. Buchanan progress meant evolution, and so it was actual and continuous. He made no revolutions in locomotive practice and he accepted changes cautiously—as a man charged with such great financial interests should do; but his administration has been marked by a steady improvement in details until the splendid passenger engines of the New York Central stand among the first of their class. Probably the policy of the road as to freight locomotives might wisely have been changed some years ago, but it would be difficult to find any locomotives more powerful or more efficient than the latest moguls put into that service. But with all of Mr. Buchanan's Scotch prudence he has been bold enough, and he is among the pioneers in raising the center line of the boiler. Mr. Forney said years ago that "Buchanan can get more out of a ton of coal than any other man in the business." A statement so sweeping would be hard to maintain, and it is possible that Mr. Forney would not try seriously to maintain it now, but it shows the rank taken by Mr. Buchanan in the estimation of high authorities. The details of improvements in the locomotive made under Mr. Buchanan's administration would be too many to go into now; as we have indicated above, they are a part of the evolution of the locomotive. Perhaps the best known single thing that he did was the design of his famous firebox, which has been in use now for a quarter of a century. Mr. Buchanan is a member of the Institution of Civil Engineers (London), but singularly enough he has never joined the American Society of Mechanical Engineers, and he has taken but little part in the work of the railroad technical societies and clubs.

ELECTIONS AND APPOINTMENTS.

Central Vermont.—The officers of this company, whose property was sold on March 21, are: President, E. C. Smith, St. Albans, Vt.; Vice-President and General Manager, E. H. Fitzhugh, Toronto; Treasurer, R. H. Ingram, Montreal, Que.; and Auditor, M. M. Reynolds, St. Albans, Vt. The Directors are: Chas. H. Hays, Montreal, Que.; John Bell, Belleville, Ont.; E. H. Fitzhugh, E. C. Smith, David D. Ranlett, St. Albans, Vt.; John Stewart, Aldace F. Walker, Rutland, Vt.; W. Seward Webb, Shelburne, Vt.; John G. McCullough, Bennington, Vt.; Samuel E. Kilner, New York; Ezra H. Baker, Charles M. Wilds and H. B. Bay, Boston, Mass. (See Railroad News column, p. 219.)

Chicago & West Michigan.—At the annual meeting of the stockholders Mark T. Fox was elected a Director.

Chicago, Indianapolis & Louisville.—Following the gaining of control of this company by J. P. Morgan & Co., the following Directors were elected to represent that company: Richard Trimbull, Anthony J. Thomas, Amos T. French, Temple Bowdoin, R. M. Gallaway and C. H. Coster. The above are to succeed Calvin S. Brice, deceased; John Greenough, John G. Moore, Edward R. Thomas, John A. Hilton and Crawford Fairbanks. The following Directors were re-elected: Samuel Thomas, William H. McDoel, Gilbert B. Shaw, Volney T. Malott and James Murdock. The officers were elected as follows: President, William H. McDoel; Vice-President, A. J. Thomas; Secretary, John A. Hilton, and Treasurer, W. H. Lewis.

Fitchburg.—J. S. Turner, heretofore connected with the Colorado & Southern, has been appointed Superintendent Motive Power of the Fitchburg.

Grand Trunk.—George C. Jones has been appointed Superintendent of the Middle Division of the G. T. with headquarters at Toronto, Ont., succeeding E. H. Fitzhugh.

Kansas City, Pittsburg & Gulf.—O. H. Crittenden has been appointed Assistant Engineer Maintenance of Way, with headquarters at Texarkana, Tex.

Missouri Pacific.—W. T. New, Assistant Master Mechanic, with headquarters at Kansas City, Mo., has resigned.

Narragansett Pier.—John M. Hall, Vice-President of the New York, New Haven & Hartford, has been elected a Director.

Nevada County Narrow Gauge.—George Fletcher has been elected Treasurer, with headquarters at Grass Valley, Cal., succeeding Edw. H. Brown, resigned. Chas. P. Loughridge has been appointed Superintendent.

New York Central & Hudson River.—A. M. Waitt has been appointed Superintendent of Motive Power and Rolling Stock east of Buffalo, and the Dunkirk, Allegheny Valley & Pittsburgh RR., succeeding William Buchanan, resigned. Effective May 1.

New York, New Haven & Hartford.—J. V. A. Trumbull, heretofore Superintendent of the Valley Division, with headquarters at Hartford, Conn., has been appointed Superintendent of the Stonington Division, with headquarters at Providence, R. I., succeeding J. B. Gardiner, resigned. The Hartford and Valley Divisions have been consolidated, and Superintendent C. S. Davidson is to be in charge.

North Brookfield.—At a meeting of the stockholders held April 18, Alden Batcheller was elected President and James Miller, Vice-President.

Northern Pacific.—F. T. Robertson has been appointed Superintendent of Construction, with headquarters at Spalding, Ida.

Omaha, Kansas City & Eastern.—H. B. Johnson has been appointed Auditor, with headquarters at Quincy, Ill.

Rock Island & Peoria.—Joseph Elder, Master Car Builder, with headquarters at Peoria, Ill., has resigned.

San Francisco & North Pacific.—George A. Newhall has been elected First Vice-President. Gilbert Palache and E. Scott have been elected Directors, succeeding James B. Stetson and A. H. Payson, resigned.

Southern Pacific.—E. O. McCormick has been appointed Passenger Traffic Manager, effective May 1.

Staten Island Rapid Transit.—At the annual meeting of the stockholders, held April 25, Vernon H. Brown was elected a Director, succeeding Thomas M. King, of Allegheny, Pa.

Tuscarora Valley.—At a meeting of the stockholders held at Port Royal, Pa., April 10, D. B. McWilliams was elected Secretary and N. H. Suloff, Auditor. At the same meeting the following Directors were elected: William Kraft, G. S. Conn, Joseph Hull, R. S. Siebert, N. H. Suloff, D. B. McWilliams and Samuel Peacock.

Wabash.—H. A. Lloyd, Assistant Secretary and General Claim Agent, with headquarters at St. Louis, Mo., has resigned.

West Shore.—C. H. Ketcham, Superintendent of the Buffalo-Coeyman's Division, with headquarters at Syracuse, N. Y., has resigned.

RAILROAD CONSTRUCTION, New Incorporations, Surveys, Etc.

ALASKA & NORTHWESTERN.—Application will be made at the next parliament at Canada for an act to incorporate this company to build a railroad at or near Pyramid Harbor, Alaska, north through Chilkat Pass, via the Dalton Trail to Fort Selkirk, N. W. T. The company was incorporated in West Virginia last year to build the American end of the road. Among those interested are: N. Pierre Humbert, Jr., and F. W. Ames, of Boston, Mass. (Feb. 18, 1898, p. 130.)

ARKANSAS VALLEY & GULF.—Application has been made in Kansas for a charter for this company, with a capital stock of $100,000, to build a line from Arkansas City, Kan., southeast through Oklahoma and Indian territories to Texarkana, Tex., with a branch through Blackwell or Kay City to Tonkawa. The Directors for the first year are: Dwight Braman, of New York; Harry S. Motfitt, of Boston; Fred D. Fuller, W. B. Lawrence and George H. Whitcomb, of Topeka.

BAKERSFIELD & LOS ANGELES.—Steps are being taken to disband this company, which was incorporated in September to build the connecting link between the Atchison, Topeka & Santa Fe and the San Francisco & San Joaquin Valley. Now that the Southern Pacific has given trackage rights over this line for this connection, the road will not be built. (Sept. 23, 1898, p. 696.)

BALTIMORE & OHIO.—Joint surveys have been made by this company and the West Virginia & Pittsburgh for a cut-off, connecting the B. & O. with the West Virginia Central tracks at Ridgley, W. Va.

The receivers have authority from the courts to make further expenditures of nearly $1,000,000 in improving the road.

BANGOR & PORTLAND.—This company is building an extension of the Easton & Northern line south to South Easton, Pa., about four miles, to connect with the Lehigh Valley.

CENTRAL NEW YORK & NORTHERN.—This company was incorporated in New York, April 20, with a capital stock of $1,500,000, to build a line from Perkinsville or Portway, Steuben County, on the Central New York & Western, to run north 55 miles via Canadice, to connect at Macedon with the West Shore; also a branch from Canadice west five miles to the Hemlock Lake branch of the Lehigh Valley at Hemlock Lake. The principal office will be at Wayland, N. Y. The Directors are: William Clark, Martin Kimmel, Henry V. Pratt, and George Nold, of Wayland; Frederick H. Mollenhauer, Egmont Mollenhauer, George S. Bixby, and Simeon M. Ayers, of New York City, and Ward J. Spafford of Brooklyn.

CENTRAL OF NEW JERSEY.—The General Superintendent writes that there is no truth in the report that this company is extending its line from Bound Brook, N. J., to Trenton (April 21, p. 288). The work that is now in progress is probably that of the Trenton, Lawrenceville & Princeton Electric RR., referred to in the Electric Railroad Construction column under Trenton, N. J.

CENTRAL WEST VIRGINIA.—This company has been incorporated in West Virginia, with a capital stock of $1,000,000, to build a railroad from Bartlett Station in Harrison County to the head of Jack's Run. The incorporators are: Carl H. Hunter, Walter W. Willis, J. F. Allen, C. S. Sands, J. B. Hart, all of Clarksburg.

CHESAPEAKE & OHIO.—Work was begun, according to report, last week on the extension from Prince, W. Va., southwest about 12 miles across New River to Beckley. The first work is erecting the bridge. (April 21, p. 288.)

The General Manager writes that the company expects to make some additions to the yards at Newport News, Va., to accommodate a new elevator and coal pier that will be erected some time during the season. (April 21, p. 288.)

CHICAGO & NORTHWESTERN.—This company, according to report, has made a proposition to the people of Harlan, Ia., to extend its line from Kirkman south about six miles to that city, connecting with the Chicago, Rock Island & Pacific. The condition is that the people of Harlan give the company right of way and grounds for a depot.

A mortgage for $416,000 has been given to the Farmers' Loan & Trust Co., as trustees for the Mankato & New Ulm extension, from Mankato, Minn., to New Ulm, about 30 miles. It is dated April 1, 1899, and matures Oct. 1, 1920. Interest 3½ per cent. (Feb. 10, p. 108.)

CHICAGO, BURLINGTON & QUINCY.—Among the reported new improvements on this line are 35 miles of double track being laid between Mt. Pleasant and Batavia, Ia., and 10 miles between New London and Mt. Pleasant. With the exception of 15 miles, this will complete the double track from Chicago to Mt. Pleasant on the Illinois and Iowa divisions. Considerable work is being done in reducing grades and eliminating curves at Princeton, Buda, Galva and Kirkwood, Ill.

Grading is reported begun on the Grant City & Southern line from Grant City, Mo., south 21 miles to Albany, connecting two branches of the road. The company was incorporated June 4, 1898. (June 10, 1898, p. 420.)

CHICAGO, MILWUKEE & ST. PAUL.—Grading has begun on the extension from Rockwell City, Ia., northwest via Sax City to Storm Lake. It is stated that the line is to be ultimately extended to Spencer. (April 14, p. 271.)

CHICAGO, ROCK ISLAND & PACIFIC.—After completing the survey from Indianola, Ia., west, surveyors will run a line from Indianola east about 25 miles to Knoxville, to connect the Indianola and Winterset branches with the terminal of the Washington branch. (April 21, p. 288.)

COLORADO & SOUTHERN.—The Chief Engineer writes that there is nothing at present, at least, in the report that the company will build a spur in Laramie County, Wyo., to the Hartville mines. Some years ago the Union Pacific ran lines in that locality, but no building was done and it is not likely that any will be done this season. (April 14, p. 271.)

CONESUS LAKE.—The proposed extension of one mile from Lakeville, N. Y., to Pebble Beach (Dec. 16, 1898, p. 903), is abandoned for this season. (Official.)

COPPER RANGE.—Work is to be begun as soon as snow goes off on this proposed line from Calumet, Mich., southwest 56 miles via Hancock and Houghton to Greenland, on the Ontonagon branch of the Chicago, Milwaukee & St. Paul. The line is located from Houghton to Greenland, 41 miles, and surveys are in progress from Houghton to Calumet. C. E. Loss & Co. of Chicago have the grading, bridging and track laying from Houghton to Greenland, and the Phoenix Bridge Co. have the steel trestles, of which there are three. The maximum grade is one per cent., excepting the rise from Portage Lake, which is two per cent. The company has already purchased 60 miles of 75 lb. steel rails from the Illinois Steel Co. (April 14, p. 271.) C. A. Wright is General Manager, and Thomas Appleton, Chief Engineer; both of Houghton, Mich. (Official.)

CRIPPLE CREEK.—This company, already incorporated in Arizona, is also incorporated in Colorado, with a capital stock of $2,000,000, to build a railroad from Canyon City, Col., on the Atchison, Topeka & Santa Fe, and the Denver & Rio Grande, to run north about 25 miles to the Cripple Creek mining district. The incorporators are: Henry McK. Twombly and George H. Proctor, of New York City; T. Jefferson Coolidge, President of the Old Colony Trust Co.; Major Tuttle, ex-President of the Maine & Boston Ry., and George Von Lemeyer, an Old Colony Trust Co. Director, all of Boston, and A. H. Crocker and F. F. Brett, representing Marshall Field & Co., of Chicago. (April 14, p. 271.)

EL PASO & NORTHEASTERN.—About 70 miles, of which 30 miles is continuous, has been graded on the proposed extension from Alamogordo Junction, N. M., northeast 76 miles via Inlarosa, Malagro, Three Rivers, Nogal and White Oak Junction to Saludo. Track laying was to be begun April 20. All the contracts are let and all the materials purchased. (Jan. 27, p. 72.) Geo. S. Good & Co., of Lock Haven, Pa., and Alamorgordo, N. M., have the contract. (Official.)

GRAND RAPIDS & INDIANA.—This company, according to report, has decided to expend several hundred thousand dollars on its line in Indiana and Southern Michigan, including the re-laying of 30 miles of track with 75 lb. rails, and the building of three bridges.

GREAT NORTHERN.—(See Eastern of Minnesota, RR. News column.)

HICKMAN & TIPTONVILLE.—This company has been incorporated in Tennessee, with a capital stock of $100,000, in connection with the Lake County Levee & Drainage Co., incorporated at the same time to build a railroad and levee from Hickman, on the Nashville, Chattanooga & St. Louis, southwest 20 miles to Tiptonville. The incorporators of both companies are: J. C. Harris, P. Davis, J. W. Chambers, W. R. Alger and J. H. Smith.

HUTCHINSON & SOUTHERN.—The extension from Blackwell, Okla., southeast about 17 miles to Ponca City, on the Atchison, Topeka & Santa Fe, will be completed in about six weeks. The contract for grading, bridging, track laying, etc., is let, and the grading is two-thirds done. (April 14, p. 271.) All the material is on the ground to complete the road. (Official.)

ILLINOIS CENTRAL.—About five miles of track is reported laid on the Yazoo Delta extension from Moorehead, Miss., south 15½ miles to Lake Dawson. The new line connects with the Yazoo & Mississippi Valley at Tutwiler. It is proposed to complete the line early in May. (March 31, p. 235.)

IOWA CENTRAL.—The City Council of Peoria, Ill., has granted permission to this company to build an extension from its terminal on Chestnut St. to Water St., with a loop giving an entry in the train shed of the Peoria & Pekin Union.

KANSAS CITY, ST. JOSEPH & OMAHA.—Plans have been filed in Atchison County for the portion of this proposed line in that county. The company was incorporated recently in Missouri to build from Kansas City up the Mississippi via St. Joseph to Omaha, Neb. The old surveys made by the St. Joseph, Tarkio & Northwestern will be used by the company. The older company was incorporated in Missouri in 1890 to build from Savannah on the Chicago Great Western, northwest to Tarkio, about 45 miles, and surveys were made that year. (Aug. 8, 1890, p. 563; Oct. 17, 1898, p. 727.) J. H. Pickering, of Kansas City, Mo., is interested in the new company.

LINVILLE RIVER.—Track laying is reported begun on this line from Cranberry, N. C., southeast 14 miles to Pineola. The company expects to have it completed by the middle of May.

MISCELLANEOUS COMPANIES.—The Bethlehem Construction Co. has been incorporated in Delaware, with a capital stock of $15,000, for building railroads, etc. Among the incorporators are: Jos. J. McKee, Clarence A. Wolle, both of Bethlehem, Pa.; Wm. H. Stayton, New York.

MISSOURI MIDLAND.—Grading has been in progress for several weeks, according to report, on this line from Columbia, Boone County, Mo., to Huntsdale on the Missouri, Kansas & Texas, nine miles. The company was incorporated in Missouri, Jan. 10. The President is Charles Wiggins, and the Chief Engineer Robert Moore, all of St. Louis, Mo. (Jan. 20, p. 53.)

NEILLSVILLE & LAKE SUPERIOR.—This company has been organized to build a road from Neillsville, Wis., on the Chicago & Northwestern, to run north about 165 miles to Superior. It will run through 400,000 acres of land owned by the projector, J. L. Gates of Milwaukee.

NEW YORK, NEW HAVEN & HARTFORD.—Work was begun last week laying 15,000 tons of 100 lb. rails on the New London Division. These rails will be laid between New Haven and New London, and between East Haven and the junction at New Haven, both double track. (Jan. 13, p. 33.)

OREGON RAILROAD & NAVIGATION.—This company is now building, under contract to Corey Bros., a branch from Fairfield, Wash., southwest about five miles to Waverly to connect with the beet sugar factory being built by D. C. Corbin. (March 31, p. 236.) The factory is located on Hangman Creek, from which an abundant supply of water is obtainable. (Official.)

Considerable progress has been made in changing the line on Meacham Creek, near Huron, Ore., on the west slope of the Blue Mountains. Hale & Smith of Portland, who have the contract, began work in November. The plan is to change the channel of Meacham Creek so that the railroad will pass along the south side. At present it crosses the creek six times. In addition to this work, there will be seven new steel bridges at that end of the line.

PACIFIC SHORT LINE.—Press reports state that Donald McLean, one of the original promoters of this enterprise, has succeeded in getting strong backing for his road, and that his transcontinental line from Sioux City, Ia., west via Lake City to San Francisco is to be built at once. This report seems a little premature in some respects, since the Sioux City, O'Neill & Western, which forms the first section of the proposed route, has been in the hands of receivers for some months and will not be sold at foreclosure until May 26. The project has been under consideration for the past ten years.

PHILADELPHIA & READING.—This company proposes, according to report, to build a number of main line sidings as follows: At Stony Creek, Pa., 1,700 ft; Royersford, 1,700 ft; Perry, 4,200 ft., and Mohrsville, 6,000 ft. The company will also build a freight yard at Woodlane between Roseglen and Conshohocken. This will cover about 16 acres with a length of 4,600 ft. Chas. Nohlan has the contract for the masonry. Grading and track laying will be done by the company's forces.

QUAKERTOWN & EASTERN.—Grading is reported completed on the extension from Springtown, Pa., northeast to Riegelsville, and track laying is to be begun soon. (May 13, 1898, p. 348.)

RIO GRANDE WESTERN.—Work is being rushed, according to report, on the extension from Provo City, Utah, northeast 15 miles toward Heber City. Grading is completed for the first six miles and the subcontractors are at work in the canyon. The seventh mile just at the mouth of the canyon is very difficult. Fred. Barben and David Huffaker of Provo Valley have the sub-contract under Deal Bros. & Mendenhall of Springfield, Utah. Track will be laid at once up to the mouth of the canyon. (March 17, p. 198.)

SIERRA OF CALIFORNIA.—The extension from Sonora, Cal., to Summerville, the company hopes to have completed by July 1. The track layers will soon reach Sullivan Creek, where a halt must be made while the one-span bridge of 100 ft. is built over the stream, and the rails will then be laid to Curtis Creek. (April 7, p. 254.)

SOUTH BUFFALO.—This company was incorporated in New York, April 25, with a capital stock of $500,000, to build a steam railroad from a point on the Buffalo Creek line in Buffalo, south eight miles to West Seneca, on the Lake Shore & Michigan Southern. The Directors are: John J. Albright, Edmund Hayes, George B. Williams, William A. Rogers, Franklin D. Locke, John G. Milburn, Raymond Albright, Herbert H. Hewitt and Ralph H. Plumb, of Buffalo.

SOUTHERN INDIANA.—Over 60 cars of rails have arrived at Elnora, Ind., according to report, and grading is to be begun at once on the proposed extension from Elnora southwest 46 miles to Terre Haute. (April 7, p. 254.)

SOUTH CAROLINA & GEORGIA.—Preliminary work is begun, according to report, for grading the extension of the Ohio River & Charleston from Gaffney, S. C., southeast about 20 miles to Spartanburg. (March 24, p. 214.)

TEXAS MEXICAN.—(See Railroad News column.)

TUG RIVER & ELK FORK.—This company was incorporated in West Virginia, April 20, with a capital stock of $30,000, to build a railroad from Welch to run southeast about 20 miles through McDowell County to a point near the north and south fork of Tug River, and thence across the line to Pocahontas, Va. The incorporators are: C. L. Ritter, of Welch; and E. M. Watts, Henry S. Cato, Z. T. Vinson and T. J. Bryan, of Huntington.

UTAH & PACIFIC.—Rails are reported laid to Modena, 60 miles southwest from Milford, Utah, and it is expected that track will be laid to the State line at Uvada, about 76 miles, by the middle of May. Another company will carry the road from that point toward Los Angeles, Cal. A. W. McCune of Salt Lake City, Utah, is President. (March 10, p. 180.)

WYOMING ROADS.—Boston capitalists have made an offer to the people of Saratoga to build a connecting line from that town north about 25 miles to the Union Pacific near Ft. Steele, provided the people will donate about $100,000 of property.

Electric Railroad Construction.

ALBANY, N. Y.—The Albany, Helderberg & Schoharie Electric Ry. Co. filed a certificate during the week with the Secretary of State of an increase of capital stock from $300,000 to $1,250,000. This increase was authorized at a recent meeting, at which it was originally intended to increase the capital to $450,000. Work is now in progress on the road. (Feb. 17, p. 132.)

ANGOLA, IND.—M. E. Griswold, General Manager of the Northeastern Indiana St. Ry. Co., which proposes to build from Orland to Angola, thence to Fort Wayne, in all about 40 miles, has made a contract with the citizens of Orland, Ind., whereby they agree to procure 22 miles of right of way for the proposed road and donate five acres of land for a power house. He also informs us that the prospects are good for an early start on building the road. Ten bridges will be required on the road. The officers are: President, S. A. Powers; Secretary, J. F. Shuman; Treasurer, D. A. Garwood; General Manager, M. E. Griswold, Auburn, Ind. (Fort Wayne, Jan. 27, p. 74; March 3, p. 162.)

AUBURN, CAL.—J. H. Willis and H. Bernhard have applied for a franchise to build an electric street railroad in this city.

BIRMINGHAM, ALA.—On April 11 the Birmingham Ry. & Electric Co. began operating its new electric lines from Second Ave. to Five Points, 2½ miles.

BOSTON, MASS.—Work has been begun by the Lynn & Boston St. Ry. on the improvements, which are to cost $240,000 and which have been contemplated for some time. Heavier rails are being laid from the junction of Sumner and Market Sts., Boston. (Feb. 17, p. 138.) A controlling interest in the L. & B. was recently secured by Tucker, Anthony & Co., and E. Rollins Moss & Bros., and it is said that the North Shore Traction Co., which controlled the L. & B., is to be abandoned.

BRADFORD, PA.—Grading is begun for the Lewis Run extension of the Bradford Electric Ry. (Jan. 20, p. 54.)

BRISTOL, R. I.—The Barrington, Warren & Bristol St. Ry., which is building an electric railroad between the places named, all in Bristol County, will probably be placed in operation this summer. This company was incorporated in May, 1898, with a capital of $500,000. Albert T. Potter, Manager of the Pawtucket St. Ry., an electric railroad in Providence, is one of the incorporators, and Henry V. A. Joslin, Secretary of the Pawtucket St. Ry., is also interested. (July 23, 1898, p. 555.)

BROOKLYN, N. Y.—P. H. Flynn is said to be receiving bids for building a trolley railroad across Jamaica Bay to Rockaway Beach, which will be built on a trestle and later filled in and macadamized to permit of a driveway. The right to build this road is said to have been obtained before the street railroads in Brooklyn were consolidated and has no connection with existing companies.

CHICAGO, Ill.—The Chicago & Forest Lake Electric RR. Co. will build an electric railroad across Lake County from Fox Lake to Lake Michigan and has decided upon Lake Forest as the eastern terminus, which at first it was proposed to have at Waukegan, and surveyors are changing the location. Most of the right of way is over private property. The company recently increased its bond issue by $300,000 to complete the road, for which it has a 50-year franchise. The road will carry freight as well as passengers. E. C. Weeks is Manager. (Feb. 3, p. 96.)

The Western Elevated Ry. Co., which for some time has had in contemplation the building of an elevated railroad, which is to be suported on a single line of iron posts, has an ordinance before the City Council which provides for a four-cent fare, 10 per cent. compensation and the option of municipal ownership. John M. Duffy is attorney for the new company.

CLEVELAND, O.—The Cleveland, Berea, Elyria & Oberlin Ry. has been granted a franchise for the extension along Lyman Ave. to Linndale, a distance of 3½ miles southwest. The franchise provides that the road must be in operation in four months and that the company shall enter into a traffic arrangement with the Cleveland, Medina & Southern Ry., to permit the latter company to operate its cars on the tracks of the former. This extension is the second of those mentioned in this column Feb. 3, p. 93.

CUMBERLAND, R. I.—We are informed that work is now in progress on the Cumberland St. Ry. This company was incorporated March 1, 1898, with a capital of $100,000, to build an electric railroad in the town of Cumberland. Andrew J. Currier, Valley Falls, R. I., and P. J. Gaskin, Cumberland, are interested. (Woonsocket, Feb. 10, p. 110.)

FINDLAY, O.—The Findlay St. Ry. Co. will, according to report, extend northward and cross the Pittsburgh, Cincinnati, Chicago & St. Louis to connect with the proposed extension of the Toledo, Bowling Green & Fremont.

FORT SMITH, ARK.—The Fort Smith Traction, Light & Power Co., which operates a horse railroad in Fort Smith, has suspended services on Garrison Ave., the business street of the city, and is now installing an electric railroad.

GALION, O.—The Ohio Central Traction Co., heretofore referred to as the Bucyrus-Galion-Crestline Electric RR., in this column, under Bucyrus, O., was, we are officially informed, incorporated April 20, with a capital stock of $225,000. Grading is in progress on the proposed 12½ miles between Galion and Bucyrus. The rails have already been delivered. The equipment, which is to consist of four open and four closed motor cars, will be delivered by June 1, and it is expected to have the road in operation by June 15. The plans for the equipment of the power house include two 200-h. p. Slater engines; two 150-kw. G. E. generators and Turner boilers. The officers are: President, Israel A. Kelsey; Secretary, R. W. Johnston; Treasurer, S. C. Moorehouse, and Manager, W. E. Haycox. Bucyrus, April 21, p. 289.)

GRAND RAPIDS, MICH.—The Common Council of Grand Rapids has granted a franchise to Wm. T. Hess and others for the proposed 30-mile electric railroad from Grand Rapids southwest through Kent County to Ottawa Beach. Mr. Hess is given 90 days in which to accept. No other interurban electric line will, according to the franchise, be given an entrance into the city over the same route as granted to Mr. Hess. This proposed electric railroad will practically cover the same territory between Grand Rapids and Ottawa Beach as the Chicago & West Michigan. (Feb. 3, p. 94.)

GREENFIELD, MASS.—We are officially informed that the Montague Electric St. Ry. Co., capitalized at $15,000, will build the 2¼ miles of electric railroad to Montague Center, to be leased to the Greenfield & Turner's Falls St. Ry. Co. (April 21, p. 290.) The stock is already subscribed and a meeting of the stockholders of the G. & T. F. Ry. was held Monday to ratify the lease of the M. E. When the agreement is signed, contracts will be let to the Bay State Construction Co. of Greenfield. Bids for material will probably be asked 10 days thereafter. No new rolling stock will be bought. The temporary officers are: Chairman, Isaac Chenery, Montague; C. M. Burnett, Treasurer, Turner's Falls; and D. P. Abercrombie, Jr., Clerk. Clapp & Abercrombie are the engineers. One bridge, partly of iron, will be built.

GREENSBURG, PA.—At a meeting of the stockholders of the Greensburg, Jeanette & Pittsburgh Electric Ry., April 14, Robert McMeen of Middletown was elected President and a new board of six Directors was chosen. It was also decided at this meeting to make a number of improvements, the most important being the extension from Manor to Irwin. (Jan. 27, p. 74.)

GUTHRIE, ONT.—D. F. Smith, of Kingfisher, is said to be interested in a project to build an electric railroad from Guthrie, on the Atchison, Topeka & Santa Fe, west 36 miles to Kingfisher on the Chicago, Rock Island & Pacific, and to operate two trains in each direction daily.

HARTFORD, CONN.—The Hartford & Springfield Ry. Co., which is building an electric railroad on the east side of the Connecticut River between Hartford, Conn., and Springfield, Mass., has control of the charter granted to C. E. Woodward of Warehouse Point for 4½ miles of electric railroad proposed by the East Windsor Electric RR. The charter is to fill the gap for the continuation of the railroad proposed by the Dunham-Starr syndicate, who are promoting the H. & S. The control of this charter will be forfeited if the road is not built during the summer. (New Windsor, April 8, 1898, p. 266.)

HOUSTON, TEX.—The Houston Belt & Magnolia Park RR., a steam railroad which has been in the hands of a receiver since 1893 and which has not been operated for several years, is soon to change that portion of the line extending from Houston to Oaklawn, two miles, to electric. H. E. Fuller, who purchased this property in November, is now considering plans for otherwise improving the property, and it has been said that probably the whole road will be changed to electric.

INDIANAPOLIS, IND.—The County Commissioners of Marion County on April 14 granted a 50-year franchise to the Indianapolis & Martinsville Rapid Transit Co. to build from Indianapolis southwest through Maywood, Friendswood, Valley Mills and West Newton near the county line and thence through Morgan County to Martinsville, in all about 29 miles. F. P. Fitzgerald, F. J. Scholz, Jesse Tarkington and Joseph Elliott, Jr., are the head of the enterprise, and are the persons who applied for the franchise in the early part of February. The company agrees to build its tracks 12 ft. from the center of the highway, to pay the county $25 a mile each year toward keeping the highway in repair, and to build all necessary bridges. The terms of the franchise also specify that the company shall furnish both freight and passenger transportation at a rate not more than one-half the cost of steam railroads.

JACKSON, MICH.—We are officially informed that the Jackson, Clark Lake & Brooklyn Ry. Co., which is to build from about the business center of the city of Jackson, has made arrangements with the Jackson St. Ry. for using one mile of that company's tracks from the terminus of which one-half mile of track will be built to the city limits, using T rail on unpaved streets. From this point the road will run south 2¼ miles to Vandercook's Lake, to which point surveys have been completed. From here the road will run east 3¾ miles to Eldred Station on the Jackson branch of the Lake Shore & Michigan Southern. Then it will run south five miles to Clark's Lake. The maximum grade is 4%. Franchises and rights of way are already secured. Contracts for grading were let in the early part of November, and other contracts are soon to be let. W. B. Joslyn is Superintendent, 223 River St., Ypsilanti. (Nov. 18, 1898, p. 839.)

KANSAS CITY, KAN.—We are officially informed that 100 men are at work building the Kansas City & Leavenworth Ry., which was reported in this column last week. The proposed equipment of this road will be two open and 20 closed motor cars. Officers have not as yet been elected, but the provisional officers are H. W. Wolcott of Kansas City, Kan., and C. O. Evarts, Produce Exchange Building, Cleveland, O.

KANSAS CITY, MO.—The Missouri Electric Ry. Co. will shortly apply for a franchise to operate an electric street railroad in the southeast part of the city, and also to use part of the Metropolitan Company's tracks. The proposed road of the Missouri will be 13 miles of double track. Henry Smith is President, Baird Building. (Oct. 7, 1898, p. 733.)

LANCASTER, O.—We are officially informed that it is not the intention of the persons who are interested in the Lancaster Camp-Meeting Association to build a new electric railroad to the camp meeting grounds, but to get some present operating company to extend the road one and a third miles to that place. (April 14, p. 273.)

LEON, MEXICO.—T. H. Jeffries and B. L. Kintley, Chicago capitalists, are reported to have secured a concession for a street railroad in the city of Leon, State of Guanajuato, Mexico. It is proposed to handle freight as well as passengers.

LEWISTON, WYO.—According to report, the Lewiston Water & Power Co. will, during the course of the summer, build an electric railroad through Lewiston to Asotin, Wash., via Concord.

LOS ANGELES, CAL.—Right of way for an extension of the Los Angeles Traction Co., has been obtained to tidewater at San Pedro. W. S. Hook, General Manager.

LOS GATOS, CAL.—A 10-mile electric railroad is proposed to San Jose by H. M. Barker, J. H. Becker, A. Malpas, P. H. Jordan, of Los Gatos, and H. D. Mathews, of San Jose, Cal. The road is to be known as the People's Electric Road, and is to be capitalized at $75,000, of which $5,000 is subscribed.

LYNCHBURG, VA.—The Lynchburg St. Ry. Co., on April 17, began operating its new extension to the southwest section of the city. The Lynchburg & Rivermont St. Ry. Co.'s extension to the city park will probably be ready to operate in one week. (March 24, p. 218.)

MERRIMAC, MASS.—Work is begun on building the Hampton Beach branch of the Haverhill & Amesbury St. RR. The branch will be about five miles long, extending from Salisbury to Seabrook, N. H., where it will connect with the Hampton & Amesbury St. Ry., which is to be a part of the Exeter, Hampton & Amesbury.

MILWAUKEE, WIS.—The City Council of Kenosha has granted a 50-year franchise to the Milwaukee, Racine & Kenosha Electric Ry. Co., which was recently taken control of by the Milwaukee Electric Ry. & Light Co. The M., R. & K. now operates a road between Milwaukee and Racine, and has been trying for some time to secure right of way for an extension south through Kenosha. Mathew Slush is President. The terms of the ordinance permit of a single or double track road, beginning at the northern limits of the city, through the town on almost a straight line. The company will not be permitted to operate freight cars nor to carry freight except as personal luggage, and the fare is to be five cents to any place in Kenosha. That part of the line to the business portion of the city is to be completed and in operation by Aug. 1. It is understood that this electric railroad now extending from Milwaukee to Racine, and with the franchise just granted to extend through Kenosha will eventually reach the Illinois state line, and form part of the proposed electric railroad from Chicago to Milwaukee, now being built by the Chicago & Milwaukee Electric Ry., and which has already reached north Waukegan, Ill., near the Wisconsin line.

MOBILE, ALA.—The Mobile Light & Ry. Co. is installing new machinery in the power house to double the capacity, and to permit the company to sell electric power for commercial purposes. The capacity of the machinery at present is sufficient for 10,000 incandescent lamps.

MONTPELIER, VT.—The Mad River Valley Electric Ry., which is proposed to run from Montpelier, Vt., to Warren, about 26 miles, is reported to have about completed arrangements for building. The Spaulding Construction Co. of Boston, Mass., and V. R. Nash of Woonsocket, R. I., are interested. Towns along the Mad River Valley have voted to issue bonds to the extent of $50,000 for the assistance of this enterprise. F. C. Kennedy of Burlington is President. (Jan. 6, p. 17.)

MONTVILLE, CONN.—The Superior Court of New London County has decided in favor of the public necessity of the electric railroad between Norwich and New London, proposed by the Montville St. Ry. This company also proposes to build a two mile line connecting Waterford with New London, and to use the tracks of the New London St. Ry. and also those of the Norwich St. Ry. in those towns. Tucker, Anthony & Co., of Boston, Mass., are interested in this project, and it is said that E. P. Shaw, Jr., formerly Superintendent of the Norwich St. Ry., will superintend the building of the new line. (March 31, p. 237.)

MT. VERNON, N. Y.—The Board of Aldermen has granted the New York, West Chester & Connecticut Traction Co. a 50-year franchise. The company on April 19 filed a notice of extension beginning at North Third Ave. and Prospect Ave., thence along Prospect Ave. to Crarey Ave., along Crarey Ave., to Lincoln Ave. John M. Carty, is Vice-President, and Fred C. Cochen, Secretary.

MT. VERNON, O.—F. W. Jones, President of the Central Ohio Electric Ry., which has been proposed for about two years, informs us that it is expected that the first division from Mt. Vernon to Marion, about 45 miles of the main line, and three miles of sidings and branches, will probably be built this year. This company will handle freight, express and mail, as well as passengers. One large bridge will be necessary on the first division at Mt. Gilead.

NEW BRITAIN, CONN.—The Central Ry. & Electric Co. has refused to build the new electric line from Plainville to Southington, as the town of Plainville has made requirements which are considered by the company as prohibitive. E. H. Mather, General Manager. (March 31, p. 237.) It is probable that the road will be built over private property, making the distance three-fourths of a mile shorter.

NEW ORLEANS, LA.—The Committee on Streets and Landings of the city of New Orleans, at a special meeting, April 13, for providing for the rearrangement of the street railroad tracks on Canal St., granted to the following companies locations on that street: St. Charles St. RR. Co., the Canal & Claiborne Ry. Co., the New Orleans & Carrollton RR. Co., and the New Orleans Traction Co. None of these companies are granted the use of the entire length of the street, but are permitted to cross and also use it for lengths of several streets at a stretch.

NEW YORK, N. Y.—The Municipal St. Ry. Co. was incorporated April 19, with a capital stock of $250,000. Edwin M. Post, of the banking firm of Thomas & Post, is President; Charles A. Hamilton, Vice-President; Robert M. Gillespie, Secretary, and John B. Stewart, Treasurer. James W. Gerard, Jr., is Special Counsel. Thomas & Post, it is announced, will be the financial agents and backers of the concern. Arthur P. Hume, of Gillespie & Hume, who appear to be the largest stockholders in the new company, is reported as saying that the work will be begun as soon as possible on the road, which is proposed to extend, according to the charter from 116th St. and Eighth Ave. to King's Bridge Road and West 230th St., Riverdale Ave. and the northerly line of the city. There are to be branches to connect the main line with the junction of Eighth Ave. and 124th St. and the junction of Eighth Ave. and 145th St. In all, a distance of about nine and a third miles will be covered by a double-track system. It is believed that the new company, which proposes to give a three-cent fare, has been organized in the interest of the Metropolitan St. Ry., though this is denied by the officers of the company. The Metropolitan already operates roads on Eighth Ave. and in 116th St., where the new company purposed to build.

The Metropolitan and the Third Avenue companies have made an agreement whereby the Metropolitan is permitted to run cars on the tracks of the latter company on the Boulevard between 59th and 71st Sts. The tracks between 125th and Manhattan Sts. will also be used in common by both companies. The Boulevard road will be underground electric trolley system, but there will be double slots so that each company may use its own power.

NIAGARA FALLS, N. Y.—Senator Ellsworth has introduced a bill in the Legislature which provides that the Commissioners of the State Reservation at Niagara may buy and with the consent of the Commissioners of the Land Office may build, without expense to the State, street railroad tracks upon and along that part of the river way between Falls and Niagara Sts., in the city of Niagara Falls, and at its discretion may grant revokable licenses to street surface railroad companies to use the tracks upon the terms the Commissioners may prescribe.

PEORIA, ILL.—The Peoria & Pekin Traction Co. has let two more contracts, one for grading, reported to be for $50,000, to C. C. Gilman of Marshalltown, Ia., and the other to the General Electric Co. for electrical supplies. The rails, for which the Pennsylvania Steel Co. has the contract, are to be delivered during the first week of May. (March 17, p. 199.)

PASADENA, CAL.—General Manager W. H. Smith, of the Los Angeles & Pasadena Electric Ry., is reported as stating that it has been decided to abandon the proposed extension on West Colorado St., and Orange Grove Ave., but the three-mile horse car annex running on Villa St. and Marengo Ave. will be changed to electric to conform with the other lines of the company. The company recently ordered 50 miles of new rails.

The Mount Lowe RR., which was sold at receiver's sale March 29 for $190,000, will make improvements and build a short extension this year. This road, which runs from Pasadena to the summit of Mt. Lowe, was originally built over Government land and the titles were cleared up by the last session of Congress. The main line is electric, but that on the mountain side is cable. Valentine Peyton, Los Angeles, is President.

PHILADELPHIA, PA.—The Philadelphia, Morton & Swarthmore St. Ry. Co. has been granted a franchise in Glenolden which constitutes about one-third of the proposed route. (March 3, p. 163.)

PHOENIXVILLE, PA.—The Montgomery & Chester Traction Co. is reported making progress on building the road between Phoenixville and Spring City, work having progressed as far as the P. V. RR. crossing, where the steam railroad company is trying to prevent a crossing. (March 17, p. 199.)

PHONETON, O.—The National Traction Co., which was incorporated March 15, has a capital stock of $10,000 as a starter. The proposed road will be 100 miles between Columbus, O., and the Indiana State line. Right of way has already been secured through Franklin, Madison, Miami and Clark counties. Contracts for building the road will probably be let in 60 days. Several bridges will be required. The officers are: President, J. Q. A. Coover; Vice-President, O. P. Waymire; Secretary, N. H. Albaugh of Tadmore, O.; Treasurer, S. R. Fergus.

PITTSBURGH, PA.—The West End Traction Co., according to report, will cede to the Pittsburgh & Lake Erie RR. a portion of the right of way for the Neville Island & Coraopolis branch in consideration of permission to cross the P. & L. E. tracks.

The Monongahela St. Ry. Co., has awarded a contract to Booth & Flynn for building the Wilkinsburg & East Pittsburgh St. Ry., which is the extension which has been proposed for some time to East Pittsburgh. The contract is for about $150,000. Work is begun and about 500 men are employed. It is expected that the branch will be in operation by Sept. 1. The new line is four miles long, extending from Coal St., Wilkinsburg. Three bridges will have to be built for which George Hogg, of Braddock, has the contract for the foundations, and the Pittsburgh Bridge Co. the contract for superstructure.

PORTLAND, IND.—The Portland & Camden RR. Co., which was incorporated last September with a capital stock of $50,000 to build an electric railroad from Portland to Camden, about 12 miles long, will soon hold a meeting to secure an appropriation to build the road. Judge Hugh Kapp, of Toledo, O.; David Studebaker and Martin Toohey, of Cincinnati, are some of the incorporators. (Sept. 12, 1898, p. 697.)

PORTLAND, ME.—The Portland & Yarmouth Electric RR., which was recently transferred to new owners of which Seth H. Larrabee is one, is contemplating improvements at Pines and Underwood Spring, and will carry out the proposed improvements reported in this column Feb. 3.

PORTLAND, ORE.—The City & Suburban Ry. Co., according to report, is making preparations to lay a second track on its right of way on East Morrison St. and along Lone Fir Cemetery.

POTTSVILLE, PA.—Homer Shoemaker and M. E. Olmstead, solicitors for the Pottsville Union Traction Co., give notice that they will shortly apply for the incorporation of this company. The persons interested are: R. S. Martin, Lindley P. Bane, Norman A. Saylor and John M. Emery.

PROVIDENCE, R. I.—At a recent meeting of the town officials of Cranston, R. I., it was voted that the Town Council order the Union RR. Co. to extend its electric railroad on Dyer Ave. to the Cranston Print Works, and also to build from Meshanticut Park to the village of Oaklawn; also to build a cross-town line from Broad St., in Providence, to connect with the lines at Knitsville, in the town of Cranston.

PUNXSUTAWNEY, PA.—The Punxsutawney Passenger Ry. Co., now operating two miles of electric railroad, will, according to report, build an extension to Anita.

REDLANDS, CAL.—A meeting of the stockholders of the Redlands St. Ry. has been called for June 20 to consider the advisability of creating a bonded indebtedness of $50,000 to pay for the material and machinery necessary for building and equipping the electric railroad, and also to pay off small obligations. This road was formerly a mule car line, and is now being changed to electric power.

RUTLAND, VT.—Plans are about completed for the Lake Dunmore Power & Traction Co.'s proposed 26 miles of electric railroad from Lake Dunmore to Forestdale, Brandon, Pittsford and Rutland Center, where it is purposed to connect with the lines of the Rutland St. Ry. C. H. White is President; E. D. Blackwell, General Manager, and Geo. H. McLeod, Treasurer. (Feb. 17, p. 133.)

SAN JOSE, CAL.—A. Greeninger has petitioned the city for a franchise for an electric railroad from the northern part of the city to some point on the Alviso Channel, which will be used for freight and passenger service. A hearing will be given May 8, and if the franchise is granted, bids will be asked and the privilege awarded to the highest bidder.

SEATTLE, WASH.—According to report, the Seattle & Renton Ry. Co., which is operated by the Seattle & Rainer Beach Ry., will build an extension of seven miles from Renton to Kent. F. H. Osgood, President and General Manager.

SKOWHEGAN, ME.—The Somerset Traction Co., which operates an electric railroad 12 miles from Skowhegan to Madison, according to report, is preparing to extend the line four miles to Bombazeen Rips, where new pulp mills are to be located.

STAUNTON, VA.—The Staunton, Middlebrook & New Port Electric RR. has been organized by H. B. Sproul and others to build an electric railroad about 17 miles long between Staunton and New Port. It is expected that work will be begun by June 1 and that bids will be asked on three open and two closed motor cars about July 1.

STOUGHTON, MASS.—We are informed by N. D. Atwood that the company in which he is interested is the Norfolk-Bristol St. Ry., and he expects to receive a franchise about the middle of May.

TOLEDO, O.—The Manufacturers' Railway, which proposes to extend through Toledo, has secured a favorable decision from Judge Millard, of the Probate Court, which requires the city to consider the proposition of this company for a franchise. W. H. A. Read is Counsel.

The Toledo, Bowling Green & Fremont proposes to extend south from its present terminus in Bowling Green. Two routes are suggested, one to North Baltimore and Findlay, and the other through Jerry City and Bloomingdale to Fostoria.

TRENTON, N. J.—Grading is begun on the roadbed for the Trenton, Lawrenceville & Princeton RR., beginning at the East Trenton freight spur of the Reading RR., near the Trenton Lamp Works, 150 men being employed. Wm. J. Parry is General Manager, 25 Forst-Richey Bldg., Trenton. (March 10, p. 181.)

WALTHAM, MASS.—The Waltham, Newton & Forest Hill St. Ry. Co. has applied for location of its tracks through this place. The Newton St. Ry. has also made a similar application. Wm. M. Butler, of Boston, is interested in the W., N. & F. H. (March 10, p. 181.)

WASHINGTON, D. C.—Louis P. Hall, Superintendent of the Georgetown & Tenalleytown Ry., is said to have let a contract in Rockville for grading three miles of the Rockville Pike preparatory to building the extension. The preliminary surveys are completed for the extension of the present road from Bethesda Park, Md., to Rockville, and rails are ordered. New rolling stock will be required for the whole road when the extensions are completed. Oscar T. Crosby, of the Crosby-Stevens Syndicate now consolidating the street railroads of Washington, is President of this company, which will have a transfer system with the traction companies in Washington.

WEST SENECA, N. Y.—The Ridge Road & Lake Shore Ry. Co., of Erie County, was incorporated during the week with a capital stock of $40,000, to build an electric railroad from a point in the town of West Seneca to Hamburg. The Directors are Henry J. Pierce, Wm. B. Cutler, Clark L. Ingham, Wm. H. Gretwick, Jr., Geo. C. Riley and others of Buffalo, N. Y.

WHEELING, W. VA.—The People's St. Ry. Co. was chartered April 18, with an authorized capital stock of $500,000. This is the company for which J. J. Coniff recently applied for right of way. The incorporators are: Frank McNeel, C. L. Hill, R. N. Ran, Gilmore Brown and John J. Coniff.

YEADON, PA.—The Borough Council has granted right of way through this place to the Midland Ry. Co. in compensation for a three-cent fare. This road will connect with the Union Traction Co., at Angora.

YONKERS, N. Y.—The Yonkers RR. Co., which is owned by the Union Ry. of New York, has petitioned the City Council for permission to build another track on Yonkers Ave., between the Bronx and Hudson rivers.

GENERAL RAILROAD NEWS.

BIRMINGHAM SOUTHERN.—President Samuel Spencer of the Southern states that this road of the Tennessee Coal, Iron & Railroad Co., has been bought jointly by the Southern and the Louisville & Nashville, for $1,100,000. The road was incorporated in Alabama in February, to run from Woodstock, Ala., northeast via Tannehill to Bessemer, and thence to Ishkooda, just south of Birmingham. According to last reports surveys were in progress. (Railroad Construction column, March 24, p. 217.)

CANADA EASTERN.—In the New Brunswick Legislature Provincial Secretary Tweedale has given notice of a resolution asking the Federal Government to buy the Canada Eastern, to be run as part of the Intercolonial. This company's line runs from Chatham and Logieville via Nelson to Gibson, opposite Fredericton, N. B., 127 miles, with a branch from Blackville to Indiantown, nine miles. It has a capital stock of $1,000,000, bonded debt of $1,854,175, and has received Government aid of $400,000 from New Brunswick and $366,840 from the Dominion.

CHICAGO & EASTERN ILLINOIS.—At the annual meeting on June 7, the stockholders will vote to buy the capital stock and property of the Eastern Illinois & Missouri, incorporated Jan. 30, to extend the road from Marion, Ill., southwest 61 miles to Cape Girardeau. The contract for building is let and work is to be begun at once. (Railroad Construction column, April 21, p. 289.)

CHICAGO, BURLINGTON & QUINCY.—An official circular, issued April 20, offers stockholders of this company the right to subscribe for $16,166,000 of 3½ per cent. bonds at 75, and $4,041,500 of capital stock at par, in blocks of $1,000 bonds and 2½ shares of stock, for which $1,000 is to be paid, half on June 8, and the balance on Sept. 8. Stockholders may subscribe to one of these blocks for each 60 shares of stock held. The new issue is to retire old bonds on the leased lines east of the Mississippi River, and they are limited to $85,000,000, and redeemable at 105 per cent. and accrued interest. Among the old bonds provided for are Chicago, Burlington & Northern second mortgage 6 per cent. bonds at par, $3,450,000; first mortgage 5% bonds at 105, $8,456,175; equipment 5% bonds at 105, $953,400; funding 6% notes at par, $300,000; O. O. & F. R. Val. 8% bonds, due July 1, 1900, at par, $1,076,000; total bonds to be refunded, $13,777,500, at total cost of $14,235,575. (April 7, p. 255.)

CHICAGO, INDIANA & LOUISVILLE.—On April 25 this property, otherwise known as the Monon, passed under the control of J. P. Morgan & Co. It is stated that it is to be operated independently, but in close agreement with the Cleveland, Cincinnati, Chicago & St. Louis. The Monon has mileage of 535.46 miles, and enters Chicago over the Chicago & Western Indiana, of whose stock it owns $1,000,000. It was reorganized in 1897 as successor to the Louisville, New Albany & Chicago, which went into the hands of a receiver Aug. 24, 1896. Its capital stock is $15,000,000, and its funded debt $12,909,000. The company was immediately reorganized and several directors, representing J. P. Morgan & Co., were elected. (See Elections and Appointments.)

CINCINNATI, HAMILTON & DAYTON.—Henry F. Shoemaker, Vice-President and Chairman of the Executive Committee, very positively denies the report that his company has been absorbed into the Vanderbilt lines and the Chicago, Indianapolis & Louisville. A majority of the stock is held by himself and his friends, and they have not sold a dollar of it.

DRUMMOND COUNTY.—The Hon. Mr. Blair has given notice at Ottawa, Ont., of his intention to move in the House resolutions authorizing the Government to buy the Drummond County, to be run as part of the Intercolonial. The D. C. runs from Ste. Rosalie, Que., to Moose Park, 72.97 miles, and from St. Leonard to Nicolet and Ball's Wharf, Que., 17.06 miles. Its capital stock is $400,000 paid in, with $287,936 bonus from the Dominion and $347,420 bonus from Quebec. The Intercolonial trains now use the line on the Quebec road.

EASTERN OF MINNESOTA.—This company has filed articles increasing its capital stock by $7,500,000. The proceeds will be used to retire certain bonds and to make improvements, and for extensions into the iron fields of Northern Minnesota.

EASTERN RAILROAD OF NEW HAMPSHIRE.—The directors have notified the stockholders that consolidation with the Boston & Maine has been agreed upon, subject to the ratification by the stockholders, to take effect after the payment of the rent by the B. & M., due May 31. (March 10, p. 182.)

FLORENCE & CRIPPLE CREEK.—Press reports seem to be substantiated that this road and the Midland Terminal, together with the Smith-Moffat Reduction Works at Florence, Col., have passed into the hands of a London syndicate at a price stated at $8,000,000. The F. & C. C. runs from Florence, Col., to Cripple Creek, 43.3 miles, and it has a lease of the Golden Circle branch from Victor about five miles. The Midland Terminal runs from Cripple Creek north about 30 miles to Divide.

GREAT NORTHERN.—A circular has been issued by President Hill, announcing the intention of the company to issue $15,000,000 of new stock, which will raise the total issue to $90,000,000. This stock is to be issued for acquiring the bonds, debentures and capital stock of the Spokane Falls & Northern, the Nelson & Fort Sheppard, the Columbia & Red Mountain and the Red Mountain, aggregating $9,776,200; also $7,500,000 stock of the Eastern Ry of Minnesota (see above). Shareholders of the G. N. may subscribe at par on June 17, for the additional capital stock, at the rate of one new for each five shares held. The subscription price will be payable June 22. (Aug. 26, 1898, p. 620.)

ILLINOIS CENTRAL.—Secretary Hackstaff gives notice that in accordance with the provisions of the two-ten 4 per cent. gold bonds of the Louisville Division and Terminal of Jan. 2, 1894, the company will redeem the same upon presentation at his office, 214 Broadway, New York, July 1. Interest will cease on that date. If the bonds are presented prior to that date, the company will pay redemption value less discount 3 per cent., upon the date of preservation to July 1. These bonds are for $3,101,000, and are to be replaced by new 3½ Louisville Division and Terminal mortgage bonds of 1897, of which $3,480,000 is reserved under its reorganization plan, adopted in 1897. (July 10, 1897, p. 986.)

KANSAS CITY, PITTSBURGH & GULF.—A. E. Stillwell, August Heckscher and J. De Goyeon, Jr., have withdrawn from the reorganization committee appointed last February. Ernst Thalmann, Chairman of this committee, states that the accounts and physical condition and needs of the property are to be examined by an auditor and railroad expert appointed by the committee. The intention is to reorganize the property of the company first, and the company proposes to make the plan sufficiently comprehensive to permit of dealing with the terminal and other properties at a later date, if deemed wise. The reorganization plan, it is stated, will not be ready for several weeks.

Another committee, consisting of Wm. F. Harrity, Philadelphia, Chairman; B. N. Baker, Baltimore; August Heckscher, New York; Samuel R. Shipley, Silas W. Pettit and Winthrop Smith of Philadelphia, request the holders of securities to refrain from depositing their securities with any committee until a proper plan of reorganization has been formulated. Security holders are asked to communicate with the Chairman, care of the Equitable Trust Co., Philadelphia. (April 21, p. 291.)

NEW YORK CENTRAL & HUDSON RIVER.—The stockholders on April 19 ratified the leases of the Fall Brook Ry. and its leased lines, the Syracuse, Geneva & Corning and the Pine Creek. This will add 240 miles to the system. (Fall Brook, April 21, p. 291.)

NEW YORK, PHILADELPHIA & NORFOLK.—The new mortgages issued by this company are $3,000,000 first mortgage, and $1,000,000 second mortgage. Of the first mortgage, $500,000 is reserved for future betterments. The Fidelity Insurance, Trust & Safe Deposit Co. of Philadelphia is trustee. (Feb. 3, p. 95.)

OMAHA, KANSAS CITY & EASTERN.—The stockholders will meet in Kansas City, May 15, to authorize (1) by purchase the acquisition of the Omaha & St. Louis and the Quincy, Omaha & Kansas City; (2) an extension of the line to some competing point east of Quincy, Ill.; (3) an increase of the capital stock to $10,990,000; (4) to make $3,140,000 of the same preferred; (5) to retire the existing bonds and authorize the issue of new bonds to the extent of $20,000 per mile, and to issue other bonds for future betterments, equipment and the building of the bridge over the Mississippi. It is understood that there is a close agreement between this company and the Kansas City, Pittsburgh & Gulf through the Kansas City & Northern Connecting, which forms the connecting line between the two systems.

OTIS ELEVATING.—The sale of this road, reported last week (p. 291), was in behalf of part of the bondholders. It was a mutual sale and Commodore Van Santwood, the purchaser, represents a

interests. It was necessary to make the sale in order to equalize holdings and responsibilities of the management. (Official.)

PHILADELPHIA, READING & NEW ENGLAND.—Another installment of 25% of the assessment of the A and B income bonds, and the preferred and common stock, under the reorganization plan, is due for payment at the Fidelity Insurance, Trust & Safe Deposit Co., Philadelphia, on or before May 8. (March 31, p. 238.)

STATEN ISLAND RAPID TRANSIT.—This property was sold at public auction April 20, to Harry Bronner, R. H. Mainzer and Frank Geary of New York, for $2,000,000. This line formed a part of the Baltimore & Ohio and is in the hands of receivers. The B. & O. managers have made an offer to holders of second mortgage bonds of the Staten Island which was accepted by the committee. It is probable that the purchase was by representatives of the B. & O. (B. & O., Feb. 3, p. 95.)

TEXAS & PACIFIC.—Notice is given that more than two-thirds of the second mortgage bonds of this company have been deposited under the terms offered by the St. Louis, Iron Mountain & Southern of March 27, and that other deposits will be received up to April 29 by the Mercantile Trust Co. (March 31, p. 238.)

TEXAS MEXICAN.—Texas press reports state that C. P. Huntington and associates have bought the Texas Mexican, which runs from Corpus Christi west to Laredo, 162 miles. It is to be changed from the present 3 ft. gage to standard, and extended from Laredo northwest about 100 miles to Eagle Pass, Tex., where it will connect with the Mexican International & Southern Pacific.

WABASH.—The contract was signed April 22, between this company and the Illinois Terminal, giving the Wabash direct entrance over the Illinois Terminal tracks into Alton, Ill.

WEST VIRGINIA & PITTSBURGH.—Special Masters Bassel and T. S. Spates, appointed by Judge Nathan Goff, will sell this road within 60 days from April 20, the upset price being $1,000,000. (April 21, p. 291.)

Electric Railroad News.

ATLANTA, GA.—The Atlanta Constitution says that by the consolidation of the Atlanta Consolidated St. Ry. and the Atlanta Ry., a new company will be formed with a capital stock of $2,000,000, a majority being held in Atlanta and the remainder in Baltimore. The new company will also buy the Georgia Electric Light Plant, or will build one. The consolidation provides for an authorized issue of $5,000,000 50-year 5% gold bonds, of which $2,000,000 will be offered to the public, $2,250,000 held by the trustees against outstanding bonds, and the remaining $750,000 set aside for building an electric light plant and making minor improvements. Middendorf, Oliver & Co. of Baltimore, Md., recently secured controlling interest in the Atlanta Ry. which figures in this consolidation, and a reorganization of the property has been in contemplation since last Fall. The A. C. St. Ry. controls six other companies.

BENNINGTON, VT.—E. D. Bennett, Superintendent of the Bennington & Rutland (steam) RR., was appointed Receiver on April 24 of the Bennington & Woodford Electric RR. This road is nine miles long, and extends from Bennington to Glastonbury, and has not been in operation since last fall, when the road received considerable damage from freshets.

BOSTON, MASS.—Edward P. Shaw, Albert D. Bossom, John H. Cunningham, P. W. Sprague and Wm. M. Butler have applied for the incorporation of the Citizens' Electric St. Ry., with a capital stock of $190,000. The incorporators are persons interested in the recent purchase of various street railroads in Eastern Massachusetts, of which the Newburyport & Amesbury Horse RR. is one. The various roads will probably be consolidated in the company.

BRAINTREE, MASS.—At a meeting of the stockholders of the Braintree & Weymouth St. Ry., April 20, formal transfer of the remaining stock was made to representatives of Pepper & Register, who recently acquired possession of the property. A new board of Directors was elected as follows: A. L. Richardson, David Pepper, Jr., and C. W. Palmer of Philadelphia, Gardiner F. Wells of Hingham, A. H. Walcott of Abington, John Kelley and Joel F. Sheppard of Braintree, O. E. Chapman of Canton and E. W. Hunt and E. B. Nevins of Weymouth. The officers elected are: President, David Pepper, Jr.; Vice-President, John Kelley; Treasurer, O. E. Chapman. Superintendent Dennis Trayers will retain his position. Pepper & Register own the Hingham St. Ry., the Hanover St. Ry., the Rockland & Abington St. Ry., and the Bridgewater & Whitman St. Ry.

BUFFALO, N. Y.—The property of the Buffalo Traction Co. was transferred to the International Traction Co. on April 17. The old board of Directors resigned and a new board was elected, as follows: W. Caryl Ely, W. B. Rankine, Francis Lynde Stetson, Charles H. Coster, Daniel S. Lamont and Burt Van Horn and T. De Witt Cuyler, Chas. R. Huntley and A. G. S. Miller of the old board were continued in office. The same men who were elected officers of the roads already absorbed were elected officers of this company. The Buffalo, Belleville & Lancaster Ry. was also absorbed on the 17th and officers were elected that day as above. The Niagara Falls Park & River Ry., the Canadian property last acquired, was also absorbed that day. This is a double track electric railroad running along the Canadian side of the Niagara River from Chippewa to Queenstown, a distance of 12¼ miles. All companies that are included in this consolidation have now practically been transferred.

DUBUQUE, IA.—All the bonds and stock of the Dubuque Light and Traction Co., which includes both the Eighth and Iowa street lines, valued at $500,000, have been purchased by the General Electric Co. The Eighth street line was owned by W. H. Doane and others, of Cincinnati, O., and the Iowa street line was controlled by the Old Colony Trust Co., of Boston. The Eighth St. Electric Ry. was to be sold at auction on March 6, having been in default of a mortgage of $385,000, issued in 1893. It is the prevailing opinion that all the Dubuque street railroads are to be consolidated and a new company organized.

LITTLE FALLS, N. Y.—The Little Falls & Herkimer St. Ry., which is building an electric railroad from Little Falls to Utica, is said to be negotiating for the Bleecker street road in Utica. The option calls for the delivery of 80% of the capital stock at 50 cents on the dollar.

MANCHESTER, N. H.—The New England Electric Power Co., which was recently formed under the laws of Maine, with a capital stock of $500,000, has purchased control of the Manchester St. Ry. This property was sold to Tucker, Anthony & Co. in April, 1898. (May 6, 1898, p. 334.)

NORRISTOWN, PA.—R. M. Douglass, General Manager of the Schuylkill Valley Traction Co., and who has also acted as Secretary, Treasurer and Purchasing Agent of that company, has resigned.

NASHVILLE, TENN.—Hambleton & Co. of Baltimore informs us that they are making the arrangements for the consolidation of the Nashville St. Ry., and the Cumberland Electric Light & Power Co. Reports state that beside the above companies, the Citizens' Rapid Transit Co., which is the other street railroad in Nashville, will be included in the consolidation. (April 14, p. 274.)

NEWPORT, R. I.—The Newport Illuminating Co., which in February, 1898, bought the Newport St. Ry., is reported sold to the Shaw syndicate, which of late has been buying electric railroads in eastern Massachusetts. The N. I. Co. has about $107,000 of stock outstanding, and has a debt of about $60,000.

NORWALK, CONN.—The Norwalk St. Ry., which was reported sold last week, has elected the following new officers: President, R. A. C. Smith; Secretary, H. G. Runkle; Treasurer, A. M. Young. Wm. F. Acton has been retained as General Manager.

NEW YORK, N. Y.—The transfer arrangement between the Manhattan Elevated Ry. Co. and the Third Ave. RR. Co., will go into effect Saturday, April 29. This agreement, as already stated, will enable passengers to transfer from the elevated road to the street surface road below, and to cross-town lines owned by that company and vice versa, by the payment of three cents additional fare. A map will be placed in each of the elevated stations which will indicate where transfers may be made.

PHILADELPHIA, PA.—The American Railways Co. was incorporated April 19, in New Jersey, with a capital stock of $25,000,000. The purpose of this company is to acquire either by purchase, construction or lease, control of street railroads, and to operate, consolidate and finance them. The charter gives the company the same right in the electric lighting business of the country, but it is said that there is no intention at present of entering into that enterprise. The following are directors: A. A. McLeod, President of the American Air Power Co.; William H. Shelmerdine, a Director of the Union Traction Co.; Samuel R. Shipley, Jeremiah J. Sullivan, E. J. Mathews, Silas W. Pettit, Edward C. Lee, William F. Harrity, President of the Equitable Trust Co., and George H. B. Martin, an employee of the New Jersey Guarantee & Trust Co., of Camden. On April 20, the following officers were elected: President, A. A. McLeod; Treasurer, Wm. F. Harrity; Secretary, C. L. S. Tingley; Counsel, Silas W. Pettit. Mathews, Miller & Co., 435 Chestnut St., are agents for the company. Articles of incorporation have also been filed with the County Clerk at Camden, N. J.

PORTLAND, ORE.—All the stock of the Portland & Fairview Ry. Co. has been acquired by the City & Suburban Ry. Co., at 20 cts. on the dollar. The P. & F. built a portion of the North Mt. Tabor Ry., heretofore operated by the City & Suburban. J. D. Hart is President, and Frank S. Fields, Secretary.

READING, PA.—The United Power & Transportation Co. has been incorporated under the laws of New Jersey for the purpose of merging electric railroads in the vicinity of Reading and Lebanon, Chestnut Hill and Roxborough. Richmond L. Jones, of Reading, and John A. Rigg, President of the United Traction Co., and allied lines, are interested. The capital stock is $12,500,000, and the incorporators are: Frank R. Hansell, Geo. H. B. Martin and W. I. Eidell. Pres. Rigg is reported as stating that all the local officials connected with the different traction companies which may be absorbed, will be retained. The companies in the different towns will be operated by the local officers as at present. The new company will supply funds to improve the properties and make necessary extensions.

RICHMOND, VA.—A syndicate of Richmond capitalists are reported endeavoring through Captain Andrew Pizzini to purchase the system of the Richmond Ry. & Electric Co., which operates 50 miles of electric railroad. The franchise of this companw expires next year, and it is said that the owners, who are represented by George E. Fisher of New York, are willing to sell the property.

ST. LOUIS, MO.—The first step in the consolidation of the street railroads of St. Louis was made April 20, by the stockholders increasing the capital stock of the Lindell Ry. Co. from $2,500,000 to $10,000,000. The increase will be made by issuing $5,000,000 preferred stock and the remainder in common stock. A bond issue of $10,000,000 will also be made. (March 31, p. 238.)

SAN JOSE, CAL.—The San Jose & Santa Clara RR., a 12-mile electric railroad, and the First St. RR., a 17-mile electric road, will be consolidated. J. H. Henry and J. P. Burke, owners of the S. J. & S. C., are negotiating for the First St. RR., which three years ago was placed in the hands of Receivers J. W. Findlay and Henry Alvord. It has a first mortgage of $200,000, and a second mortgage of $100,000. Suit has been brought for foreclosure, and T. E. Johnson has been appointed commissioner to conduct the sale, which is to take place within 30 days.

SIOUX CITY, IA.—The Central Traction Co., a seven-mile electric railroad, has passed from the ownership of J. Kennedy Tod & Co., to the Sioux City Traction Co., which is to be the consolidated company of the street railroads in this city. The S. C. T. has already authorized the expenditure of $50,000 for improvements. (April 14, p. 274.)

SPOKANE, WASH.—Negotiations are reported under way for a consolidation of the Spokane St. Ry. Co., and the City Park Transit Co., which owns the Lidgerwood Park line. The S. St. Ry. is 26 miles long and the City Park six miles and is planning for extensions.

SYRACUSE, N. Y.—April 15, Wm. K. Kimball resigned as Vice-President of the Syracuse Rapid Transit RR. Co., and E. B. Tozier also resigned as a Director. E. W. Moore of Cleveland, O., was elected a Director and then made Vice-President of the company. At a meeting of the Directors on that day, it was voted to expend considerable money on the contemplated improvements, and the purchase was also authorized of the East Side Transit Co., formerly the Syracuse & East Side St. Ry. Co.

TERRE HAUTE, IND.—A syndicate is said to have been formed to take over the first mortgage bonds of the Terre Haute Electric Ry. at their face value, and to secure a reorganization of the property, which is scheduled soon to be sold at foreclosure. The syndicate will not give face value for the second mortgage bonds. (April 21, p. 292.)

WASHINGTON, D. C.—Oscar T. Crosby has resigned the Presidency of the City & Suburban system and is succeeded by Thomas J. Hayward of Baltimore. Mr. Crosby has been elected President of the United States Electric Lighting Co., and is also President of the Potomac Electric Light Co. Both electric lighting companies figure in the consolidation with the street railroads in Washington, now being carried through by Mr. Crosby and Frederick S. Stevens. The most recent acquisition for the Washington City Ry. is the Washington & Great Falls Electric Ry., for a consideration of $475,000. With the exception of the Central Traction Co., the interests represented by Mr. Stevens and Mr. Crosby now own all the street railroads in Washington.

TRAFFIC.

Traffic Notes.

A number of prominent merchants in the Business Men's League of Atlanta, Ga., are taking measures to establish a freight bureau in that city.

The Interstate Commerce Commission last week held an inquiry at Wilmington, N. C., on the complaint of citizens of that place that railroad freight rates from Wilmington are unreasonably high as compared with rates from Richmond and Norfolk to Western cities.

The Northern Transit Co., running freight steamers on Lake Erie, announces that a line is to be established between Toledo and New York by way of Oswego, N. Y., and the New York, Ontario & Western Railroad.

Press despatches say that an agreement has been made between the Cleveland, Cincinnati, Chicago & St. Louis and the Lake Superior & Lake Michigan Transportation Co., whereby three steamers from the north will be run each week to Benton Harbor with bulk and package freight for the seaboard. This freight will be taken over the Michigan Division of the railroad and delivered to the Chesapeake & Ohio. It is said the railroad company has let contracts for 1,000 ft. of new docks along the St. Joseph River at Benton Harbor.

The Cleveland Steel Canal Boat Company, which runs boats through between Cleveland and New York, by way of the Erie Canal, is building a steel pontoon barge capable of carrying six canal boats in two rows of three each. The barge will have an opening at the stern through which the canal boats can be floated into the interior while it is partially submerged. Then the gates of the barge are closed and the water pumped out. It is expected that the barge thus loaded will be able to make a speed of four miles an hour, and further expectations are that it will save enough in the cost of towage and in the losses by storm to make the barges paying investments.

Chicago Traffic Matters.

Chicago, April 26, 1899.

"Labor rates" are causing continued trouble among the Western roads. The fines recently levied against the Chicago Great Western and the Chicago, Milwaukee & St. Paul roads have not yet been paid. The Great Western is protesting against the action of Chairman Caldwell on the ground that its action was necessary to meet competition. Of course, the fines will be paid, as all the roads have sufficient money on deposit with the Western Passenger Association to cover the amounts levied. It will be only a matter of the way they are collected. Charges of cutting the labor rates have now been preferred against the Chicago & Northwestern. It is alleged that this road made a secret cut rate for 60 Italian laborers going from this city to the Northwest.

Eastbound passenger rates are not in such good condition as they were a week ago. For several months there has been hardly a break in rates, passenger or freight, to the East. But during the last few days there have been signs of weakness. The President of one of the standard roads, it is said, has given orders to meet competition, whatever this may mean. Theatrical business causes more trouble among the eastbound lines than any other one thing. The scramble for the business of the American Medical Association's convention at Columbus, O., is also causing considerable manipulation to a territory where the least infraction always starts a fire.

The Chicago & Alton has inaugurated its troublesome summer excursions into Chicago. These excursions are always a disturbing factor among the Illinois lines. Officers of competing roads are set against excursions into Chicago for the very good reason that they are wholly uncalled for. Legitimate full-rate business into this city is always so large that it is unnecessary to go into the stimulating business.

The differential basing rates of the Michigan Central are still unaccepted by the Western roads, and it is beginning to look as though they would not be put in in the West until the Michigan Central puts in differentials from Chicago proper.

Lake navigation from Chicago has opened in a small way. There have been several light charters. Preparations are being made at South Chicago for a big business from the Calumet harbor this season.